620

THE JOHN CRERAR LIBRARY

JUNE 1955

MONEY invested in equipment like this experimental Caterpillar D9X tractor pays off in economical fill work on an earth dam contract.

MEN are more apt to stay on the job when a contractor operates a mobile camp for crews and their families.

Contractors and Engineers

magazine of modern construction

EFFICIENCY and ECONOMY special issue

MACHINERY like a Koehring Twinbatch paver, Jaeger-Lakewood spreaders, and Madsen longitudinal finisher are key factors in efficient concrete paving.

MATERIALS make possible economical construction on this overpass. Sonotubes form the column piers, while Safway shores support the deck.

MANAGEMENT can keep informed of available repair items with an efficient reference system listing some 15,000 equipment parts.

MAINTENANCE of an earthmoving fleet engaged in highway grading is simplified with the use of a truck-mounted Groco lube rig for servicing.

How Concrete Of Required Workability Can Be Obtained Most Economically

every concrete man knows, obtaining increased workability adding water has two serious disadvantages. First, it in-eases the cost of the concrete because more cement is required maintain strength. Second, it lowers the quality of the con-te because it increases shrinkage and permeability and de-eases durability.

perience on thousands of jobs has proved that the best and ost economical way to obtain required workability is with zzolith. When Pozzolith is added to a plain mix, slump is increased 150% or more.

For equal slump, approximately one gallon (15%) less water per sack of cement is required for a Pozzolith mix. Plasticity is improved . . . less time is required for placing and finishing.

In addition to providing required workability most economically, Pozzolith reduces shrinkage, lowers permeability and increases durability, because Pozzolith is the key to producing concrete with the lowest possible *unit water content* (water required per cubic yard of concrete).

ABOVE—Peribonka No. 2 Powerhouse located at Chute a la Savane, Quebec. Owner: The Aluminum Company of Canada, Ltd.; Consltg. & Des. Engrs.: Shawinigan Engineering Co., Ltd.; Contr.: Pentagon Construction Co., Ltd. both of Montreal.

BELOW—Peribonka No. 1 Spillway located at Chute du Diable, Quebec. Owner and Engineers same as Peribonka No. 2 Powerhouse. Contr.: Fraser-Brace Engrg. Co., Ltd., Montreal.

POZZOLITH

in concrete for quality control

Shown here are two of many important structures built since 1932 in which Pozzolith improved engineers' control of concrete quality.

Pozzolith, an admixture for concrete, is the key to lowering unit water content—most important basic factor affecting the quality of concrete, according to leading concrete authorities.*

Pozzolith also permits rigid control of entrained air and rate of hardening of concrete.

Any one of our 70 skilled field technical men will be glad to demonstrate the full advantages of Pozzolith for your work.

*American Concrete Institute, Committee 613, 1944 Report, Page 655

Bureau of Reclamation's current Concrete Manual, Page 130

THE MASTER BUILDERS CO.

CLEVELAND 3, OHIO • TORONTO, ONT. | Subsidiary of American-Marietta Company | Cable Address, Mastmethod, New York

"IRON-CLAD" CONCRETE FOR HEAVY TRAFFIC AREAS

The Masterplate "iron-clad" concrete floor is 4-6 times more wear-resistant than the best plain concrete floor, also corrosion-resistant, spark-safe, easy-to-clean, non-slip, non-dusting and economical. Non-colored and colored.

Section of Masterplate Floor, Note Thickness of Armored Surface

Experience in all types of plants has proved the value of Masterplate "iron-clad" concrete floors in helping to maintain a smooth flow of production, reduce maintenance expense and improve plant safety.

Only with Masterplate can a Masterplate "iron-armored" concrete floor with all its important service advantages be obtained. This is because only Masterplate contains a suitable cement-dispersing and water-reducing agent which makes it possible to easily float a pound or more of the tough, ductile metal on fresh concrete and *keep it at the surface.*

Full information on Masterplate—for new floors and resurfacing old concrete floors—and the "see-for-yourself" demonstration kit supplied on request by the manufacturer, The Master Builders Co., Cleveland 3, Ohio.

COLORED CONCRETE FLOORS FOR LIGHT TRAFFIC AREAS

Colorcron is being widely used by contractors to obtain uniformly colored, long wearing concrete floors for show rooms, churches, schools, apartments and offices; also for recreation rooms, patios, driveways, sidewalks, breezeways and garages. Floors can be scored to any desired pattern.

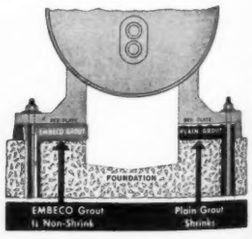
Color Plus Long Wear

Colorcron floors cost less additional than painting the floor, outwear the best plain concrete floor, and have more uniform and more intense color than is obtained from the use of pigments put in the mix. Colors: light grey, dark grey, red, brown, black, green, dark green, also non-colored.

Full directions for the use of Colorcron may be obtained from the manufacturer, The Master Builders Co., Cleveland 3, Ohio.

FOR NON-SHRINK GROUTING

To avoid shrinkage—principal cause of failure in equipment grouts—plant engineers use Embeco metallic aggregate, the material that produces a flowable non-shrink grout.



Cross-section shows how an easily placeable flowable Embeco Grout counteracts shrinkage to produce full contact with bedplate.

Following are a few of the many other uses of Embeco non-shrink mortar: grouting anchor bolts; grouting steel floor grids; grouting around pipes through walls; caulking bell and spigot pipe; patching floors, ramps and pipe forms.

A 16-page booklet of useful data and information on the Embeco Non-Shrink Method of Grouting may be obtained from the manufacturer, The Master Builders Co., Cleveland 3, Ohio.

Contractors and Engineers

magazine of modern construction

CONTENTS

JUNE 1955

MACHINERY

Getting the most out of a concrete-paving spread 8
Vacuum-lift method speeds tilt-up building job 87
Efficient hot-mix plant cuts costs on paving project 90
Proper handling methods mean economy in concrete work 92
Bridge schedule cut with precast-concrete decks 96
Big earthmovers make short work of relocating highway 98
Prewatering cuts compaction time on dam project 102
Abrasive blades halve cost of sawing pavement joints 104
Contractor's slip-form rig paves, finishes concrete base 106
Wheel tracks support rubber-tire units at swampy job site 108
New giant tractor spurs grading at school site 110

MATERIALS

Vierendeel trusses carry library over highway 112
Bolting process hastens steel-erection work 114
Stainless steel skin will enclose 42-story skyscraper 116
Speed dictates choice of materials for highway spans 118
Fast handling of steel girders completes highway bridge 120

MANAGEMENT

Efficiency and economy are the dealer's concern, too 124
Stepped-up output lowers asphalt-plant unit costs 126
Concrete department proves wise investment for contractor 128
Profits depend on careful estimating 130

MAINTENANCE

Thorough maintenance during winter shutdown really pays off 132
Downtime cut in half with lubricating unit 134
Gouging torch saves heavy repair costs on grader 136
Hydraulic puller speeds repair operation in field 138

MEN

Here's how to keep a construction crew happy 140
Victor Frenkil's fifteen-million-dollar success formula 142

MONEY

They've taken the strain out of equipment buying 152
"Moving the Earth": making vs. losing money 154
What about used-equipment auctions? 160
Favorable terms for leasing and purchasing machinery 162

DEPARTMENTS

Avoid Legal Pitfalls 94
Construction Camera 162
Convention Calendar 132
Distributor Doings 136
Editorial 4
Facts on Finance 162
Manufacturer Memos 178
Names in the News 14
News and Views 5
Weather Data 174

Editor, **William H. Quirk** — President and Publisher, **Donald V. Buttenheim**
Field Editors, **Ralph Monson, Anthony N. Mavroudis** — Contributing Editor, **Ray Day**
Associate Editor, **Catherine J. Hearn** — New Products Editor, **Frank Kypreos**
Assistant Editors, **William J. Dowdell, William T. Darden** — Art Director, **Henry E. Salloch**

Chairman of the Board, **Edgar J. Buttenheim** — Vice President, **George S. Conover**
Secretary and Treasurer, **Edwin Wagner** — Advertising Manager, **Myron MacLeod**
Business Manager, **Edward George Allen, Jr.** — Pacific Coast Manager, **Albert T. Miller**
Southern Sales Manager, **Curtis R. Buttenheim** — Production Manager, **Edna A. Jones**

Acceptance under Section 34.64 P. L. & R. Authorized at Lancaster, Pa. Vol. 52 No. 6 $4 a year, 50 cents a copy in the United States and Canada. $7 a year in other countries.

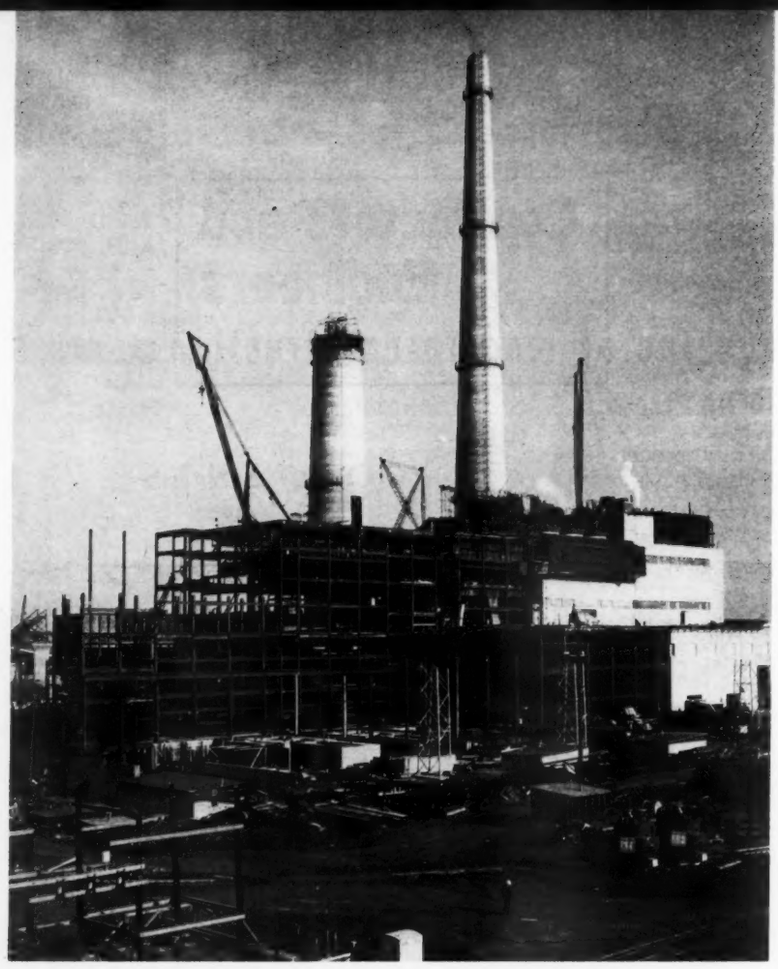
Issued Monthly by

BUTTENHEIM-DIX PUBLISHING CORPORATION
470 Fourth Ave., New York 16, N. Y.
Myron MacLeod, E. G. Allen, Jr., Edgar M. Buttenheim, Don Daily
MURRAY HILL 5-9252

CHICAGO 6, Ill., 2329 Daily News Bldg. CENTRAL 6-2853
George S. Conover, Warner H. Robinson, Arthur B. Burgan

CLEVELAND 14, Ohio, 603 The Arcade CHERRY 1-1755
Robert C. Burton

LOS ANGELES 27, Calif., 2238 Ben Lomond Drive
Albert T. Miller NORMANDY 3-2636



EDITORIAL

Efficiency and economy in construction

The construction industry is helping to provide a richer life for the people of this country. Moreover, the way that this ever-expanding industry is growing points to a progressively higher standard of living for everyone. Construction already has become the nation's greatest single production activity, providing about one job in every six. Even before this year is half over, 1955 is shaping up as another record-breaking year—the tenth in succession. The 1954 all-time-high construction volume of $52 billion is expected to be surpassed this year with an estimated total of $56 billion.

Such a construction program demands a high degree of technical competence based on efficiency and economy—the keynote of this issue. To get the most out of the private-investment and public-works dollar, construction costs must be kept as low as possible. For this reason, the contractor must avail himself of every cost-saving machine and construction technique to save money. The economical solution to a problem may be the difference between profit and loss on a job.

In this issue we are trying to point out specifically the many and diverse aids available in the never-ending struggle to reduce costs and keep abreast of changing and advanced techniques. Our major feature articles have been classified for convenience as they relate to what we call the six big M's of construction—machinery, materials, management, maintenance, men, and money. In addition, we are presenting numerous "case histories"—brief, illustrated, specific examples of new and cost-saving developments in varied construction activities.

Thus you will find many easier methods or short cuts to help you in your work. You can benefit by the experiences of others in doing your own job faster and cheaper. You can study the proven methods of other contractors by a careful reading of this magazine.

Under machinery, for instance, you can find a detailed how-to-do-it article on the concrete paving of a California freeway. Or how a Texas contractor has developed equipment for paving concrete without using forms; we also describe a similar rig built by an equipment manufacturer. New earthmoving rigs get attention, including the front-end tractor loader which is becoming as indispensable as the motor grader. Concrete-handling equipment, joint sawing, diesel pile hammers, tilt-up slabs, vacuum lifts, torque converters, precast bridges, and tracks for rubber-tire equipment are some of the big and small machinery items that are discussed in a practical way.

New materials under detailed scrutiny include the Vierendeel truss, more common in Europe than here; high-strength bolts taking the place of conventional structural rivets; a steel skin rather than masonry walls in a new skyscraper; and various types of paper and wood concrete forms.

The all-important management phase of construction is considered, with a lead-off article on a top-flight equipment distributor. Job preparation is surveyed from two angles. One describes the concrete and form-design department of a West Coast contractor, while the other discusses estimating by a prominent eastern construction firm. How management uses radio and dictating machines is told with specific examples. Nor is a contractor's natural inclination to modify his equipment overlooked. There is an article on changes made on an asphalt plant to step up paving production.

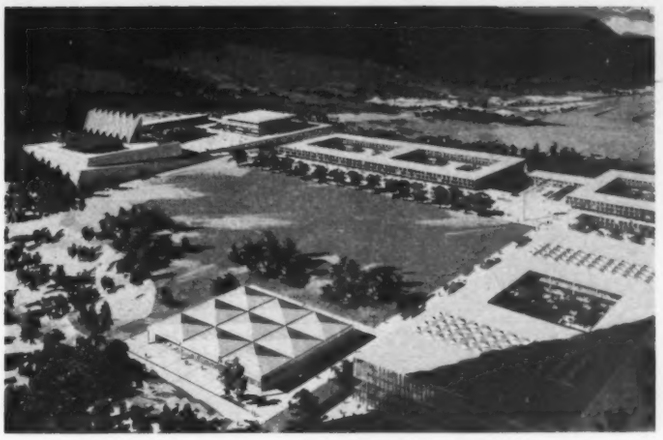
A story about a contractor's care and servicing of equipment introduces the maintenance section. This is followed by "case histories" on lubrication practices, welding, and new maintenance tools.

Men of construction, and the part they play in this great industry, get the spotlight too. For one article our editors checked in on a grading crew living in a trailer camp in a remote section of North Dakota. They also interviewed a big city contractor to bring you his up-from-nothing success story.

Money is the theme of two articles by experts discussing the purchasing and leasing of construction machinery. "Making vs. Losing Money" our book excerpt of the month, will give contractors some helpful hints, as will a story setting forth advice about equipment auctions.

This is a big issue. Hang on to it for reference. We think it will help you in your work and save you money.

NEWS AND VIEWS



An artist's conception of the main building group at the $126 million U. S. Air Force Academy at Colorado Springs, Colo. The chapel and social building (upper left) are located on a high plaza, cadet housing is just below, while the school and dining hall in the foreground enclose the rectangular campus.

This month—weeks after plans for the $126 million U. S. Air Force Academy at Colorado Springs, Colo., were unveiled—first contracts will be awarded for work on the road system at the 17,500-acre site to launch full-scale construction operations at this "West Point of the Air".

Virtually a city in itself, the academy will consist of college facilities which will cost $58 million. Of the remaining appropriation, $31 million will go into construction of an 8,800 × 200-foot airstrip at the edge of the site, plus such facilities as hangars, maintenance shops, and flight control headquarters. A total of $36 million will be used for construction of support elements for the academy, including housing for 8,000 to 10,000 people, shopping, recreational, and church facilities. And $1 million will be spent on rehabilitating the facilities at Lowry Air Force Base, Denver, Colo., which are now used by the 300 cadets comprising the academy's first class. By 1957, construction of the entire project is expected to be sufficiently complete so that the academy can be occupied by a corps of 2,496 cadets.

The detailed models shown officially two weeks ago are not likely to stop the controversy which started when the idea for such a school was conceived back in the 1920's. Now that the more recent controversy over the selection of a site has abated to some degree, the design of the academy has come in for both ardent support and criticism.

Making use of modern construction materials like aluminum, stainless steel, and glass, together with age-old materials like marble, travertine, and granite, the academy has a main building group situated on several levels of a high mesa at the foot of the Rampart Range of the Rocky Mountains. Located at the highest point, and dominating the main buildings, will be the chapel—a steel, marble, and stained-glass structure shaped like a triangular accordian—containing chapels for Protestant, Catholic, and Jewish services. Just below will be the "Court of Honor".

This plaza overlooks the campus, the cadet quarters, academy proper, and dining hall. The cadet building is actually a five-story structure, with two upper and two lower stories separated by an open level which gives onto the parade ground. Thus, cadets will have to walk only two flights to reach any story of the building. The school will consist of a rectangular building, flanked by, and connected to, library and science wings. At a still lower level, there will be the parade grounds which overlook the athletic area. The latter will have facilities for all types of outdoor sports, a building for indoor sports, and an arena open to the public.

A network of arterial roads soon to be started will link the academy proper, housing for professors and support personnel, airstrip, training and maneuver areas, railroad and bus stations to be built at the site, and U. S. 85 and 87. Another four-lane divided network of roads through the site will be for public use.

U. S. Army photograph

General Contractor
MC KOY-HELGERSON COMPANY
Greenville, S. C.

Asphalt Contractor
VIRGINIA ENGINEERING CO., INC.
Newport News, Va.

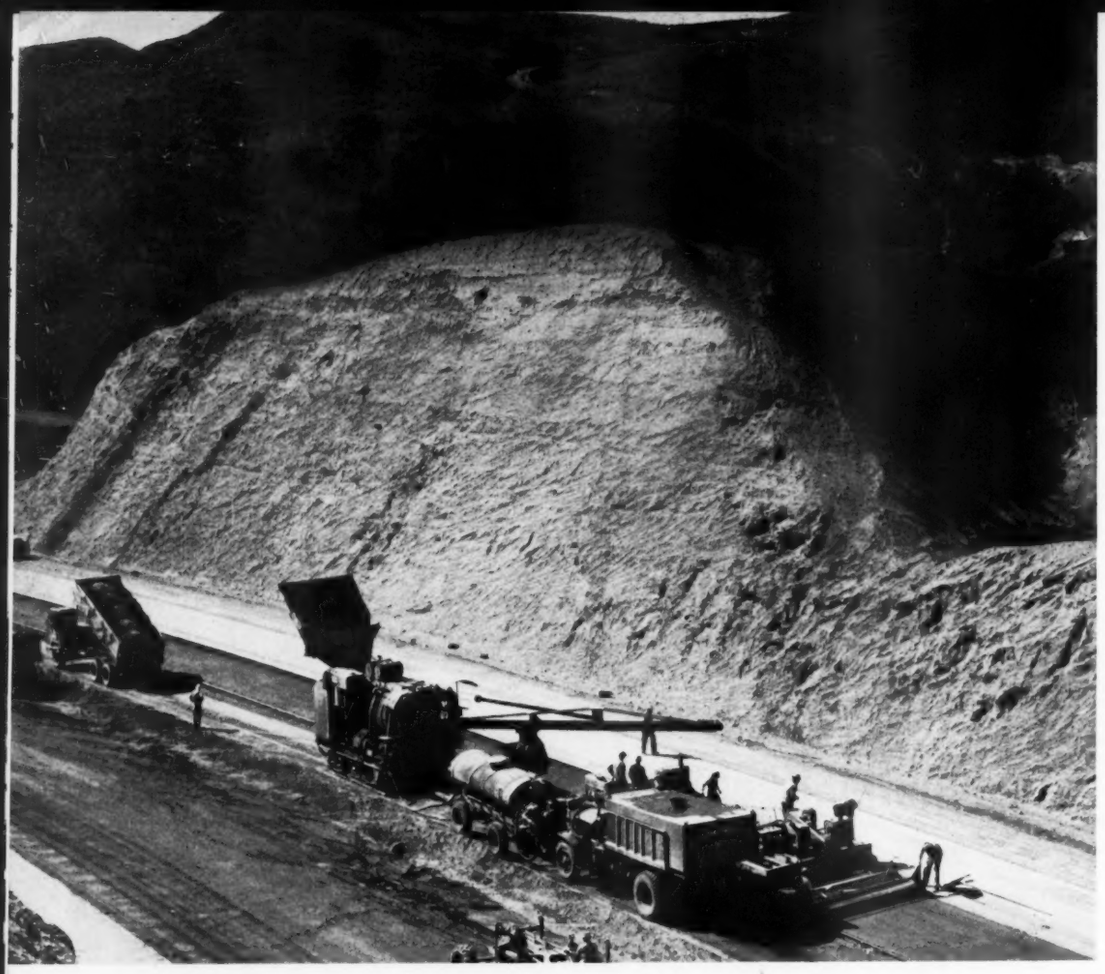
This strange looking airport, recently constructed at Fort Eustis, Va. for the Army Transportation Corps, is believed to be the world's first military air field designed exclusively for helicopters. Its distinctive features include a circular taxiway, inside which two 600-foot runways bisect one another, while eight landing pads for 'copters project from the taxiway's outer edge.

In paving this heliport's runways and taxiways, as well as the 100' x 750' parking area in front of the buildings, the same resilient, flexible type of construction was used throughout. A 7-inch waterbound macadam base was topped by a 3-inch layer of broken stone, penetrated by a hot application of Texaco Asphalt Cement. A durable, shock-absorbing wearing surface of plant-mixed Texaco Asphaltic Concrete completed the pavement.

From heliports to turnpikes, from farm-to-market roads to parking areas, there is a type of Texaco Asphalt construction exactly suited to the type and volume of traffic served. These types range from heavy-duty Texaco Asphaltic Concrete designed for concentrated turnpike traffic down to a light Texaco Asphaltic oil suitable for dust laying. Helpful information regarding methods and materials recommended for all types of asphalt construction is supplied in two free booklets which can be secured without obligation by writing our nearest office.

THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York City 17
Boston 16 • Chicago 4 • Denver 1 • Houston 1 • Jacksonville 2 • Minneapolis 3 • Philadelphia 2 • Richmond 19

TEXACO ASPHALT



Trucks built by Cook Bros., Los Angeles, haul five 1 1/3-yard batches to the paving spread. Here, one prepares to dump to the skip of the Koehring Twinbatch paver.

MACHINERY

Concrete-paving equipment handles tough job easily

Jumping machines around structures, handling forms mechanically are among techniques used on road project having steep grades

by RAY DAY

Optimum use of machines in a concrete-paving train, and good use of equipment to maneuver the train and handle forms and materials, became the pivotal factor enabling a contractor to achieve a production rate of 800 to 900 cubic yards per shift with one paver.

The best use of all equipment by Griffith Co., Los Angeles, Calif., was important on this 3-mile reconstruction of U. S. 99 because of the nature of the terrain. Work on the north-south road started where the stretch leaves the San Fernando Valley to climb through mountains toward Bakersfield. The early hold-ups were due to alignment problems, and the need for paving on grades, curves, and vertical grades. In one case, the paving train had to work on a 1,600-foot-radius curve which was superelevated 8 per cent and lay concrete on a 6 per cent vertical grade. On part of the job, conventional equipment had to tackle superelevations up to 12 per cent.

Included in the $3,060,000 California Department of Public Works contract were heavy grading, drainage structures, major bridges, and the moving of 12 large utilities at a cost of $200,000, as well as work on subbase, cement stabilization, and paving. Plant-mix was used in various ramps and channelizations leading onto the 8-inch pavement. Part of the road at the San Fernando Valley end has a wide median strip with open keyways on the inboard slab to permit future widening.

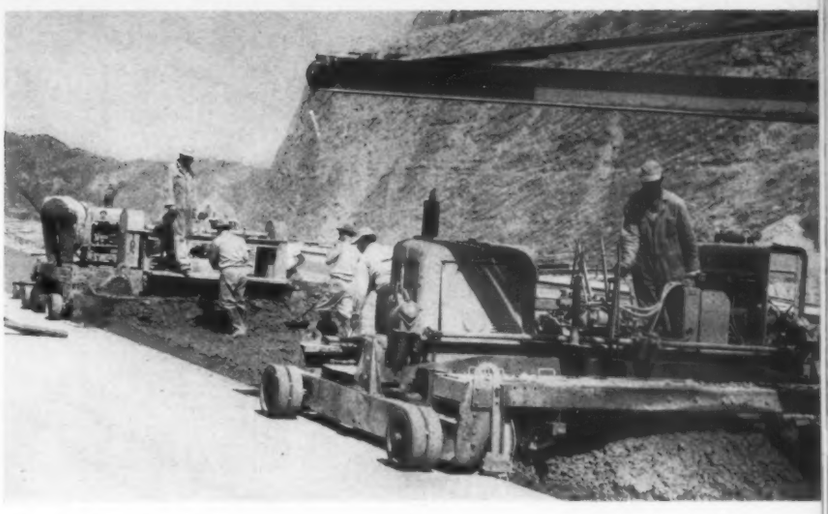
The numerous concrete structures crossing the road might have been a serious problem but for the use of a high-capacity Lima truck crane for jumping equipment around bridges or culverts. In this instance, as in several others, Griffith made all available equipment operate to keep work moving smoothly on the difficult job and to keep costs at a minimum. Like other contractors in southern California, the firm has been keenly attentive to any technique or machine which may lower cost and speed production, for competition has increased so much in the area that a net return of 3 or 4 per cent on a job is about average.

Concrete problems

For paving on superelevated curves, the company turned to the use of a stiff concrete which would stand on a slope without sagging. The biggest problem here was to produce concrete stiff enough to stand yet easy enough to handle.

The handling problem was simplified by adding an engine-driven tamping bar to a Jaeger finisher. The original tamper and its spring mounting were removed by Griffith's shop crews, and in its place a Hercules engine with a direct eccentric connection to a full working timber tamping bar was installed. This made the concrete mix more workable by driving larger rock particles down below the surface so they would not rip out under the action of the finisher.

Then, with the cooperation of the



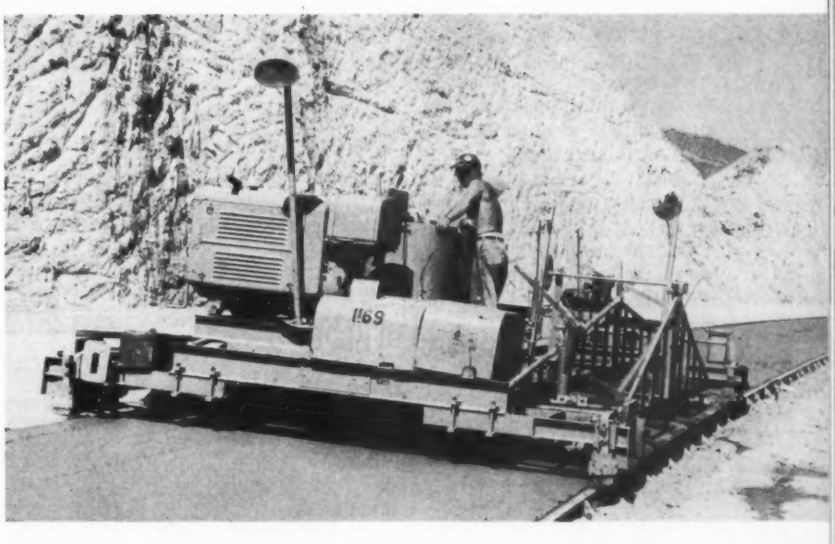
The stiffness of the concrete is still evident after the Jaeger spreader goes by. Just behind is the Jaeger-Lakewood finisher with two horizontal screeds and a timber tamping bar.

Powered by a Hercules engine, a timber tamping bar used on the Jaeger finisher drives large pieces of rock below the surface of the concrete.

California Division of Highways, the company used Durair air-entraining mix to produce from 3 to 4 per cent of air bubbles. This increased the workability of the ½-inch-slump concrete and held the mix together in the mass. To get 4 per cent of air under average conditions, where 624 pounds of cement was used in a 1 1/3-cubic-yard batch, 6 ounces of Durair was added. The material was dispensed through a double-drum arrangement.

State engineers who studied the results stated that though 4 gallons of water was cut from each 1 1/3-yard batch because of the air entrainment, the concrete was still workable. About 18 gallons of water was added to each batch at the paver, depending on moisture in the sand. The concrete did not tend to separate, and worked so evenly to both sides in superelevated sections that only three laborers were needed to keep the material equalized.

The use of the tamping bar and air-entrained concrete worked so well that the loss of concrete off the edge of 8 per cent superelevations was actually less than the amount of material spilled out of the paver skip. And when the job had been completed, no loss in pavement smoothness or the flexural strength due to air entraining was noticed.



After some hand-finishing work is done, a Madsen-built Johnson longitudinal finisher makes repeated passes to give the slab a final finish.

Sealtex curing compound is applied by Techkote Co., holder of the curing and joint-cutting subcontract. The Concut Jointmaster, background, will saw contraction joints.

Grading subcontract

Once Griffith took on the job, it subcontracted the 1,700,000-cubic-

(*Continued on next page*)

(*Continued from preceding page*)

yard grading work to J. Tomei & Sons, Los Angeles. This dirt work required cuts as much as 160 feet deep in some places. One of the tougher jobs in this phase of the work was pioneering a road to a pinnacle to start a cut. This alone required two weeks' work by a Caterpillar D8 tractor and angle-dozer. Tomei picked his best Cat and operator for the job to minimize chances that the machine would have to turn back once it started its way to the top.

To manage blasting work, Tomei pulled Thor and Worthington jack-hammers up the mountain on ropes, then fed air to the machines from Worthington and Ingersoll - Rand compressors while two drillers hung out over the side to work. When the rock pinnacles had been blown off and the Cats had established a sound footing for hauling equipment, Cats and rippers kept cuts loosened ahead of five Caterpillar DW21's and five LeTourneau - Westinghouse electric Tournapulls.

The grading, started several months before paving operations, continued for some time after Griffith started work. As the material was laid down in 8-inch lifts, it was watered by 2,500 and 3,000-gallon water-tank trucks, then compacted by Southwest sheepsfoot rollers. Material in one deep cut was almost all decomposed granite, and this was used for sub-base material.

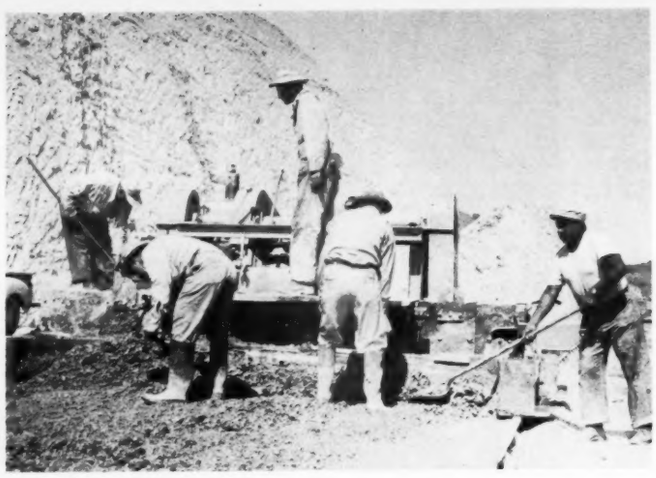
The company's equipment train included a Caterpillar D8 tractor that pulled along a fine-grader machine equipped with discharge conveyor belts, a second D8 pulling a shop-built windrow sizer with scarifier teeth in front, another D8 pulling a Wood Roadmixer, a shop-built drag leveler, two Buffalo-Springfield 8-ton rollers, and a small asphalt spray outfit for sealing the base.

Anticipating long daily runs, Griffith equipped the job with 20,000 linear feet of Blaw-Knox 10-foot-long forms. This was enough to make 10,000 road-feet, permitting three days' production at peak efficiency. Form handling was mechanized as much as possible. The Lima truck crane which pulled form pins also picked up and loaded the form sections on a flat-bed truck for transportation to the next setting position.

Ingersoll-Rand compressors and air guns drove the pins, and impact wrenches fastened the keyway forms to the sides of the steel panels. Steel dowel nut connectors and the second half of each dowel bar were screwed down by Ingersoll - Rand impact wrenches. These were powered by an I-R 105-cfm portable air compressor towed by a jeep, and a small portable electric generating set. The 15-man form crew used hand labor only where necessary.

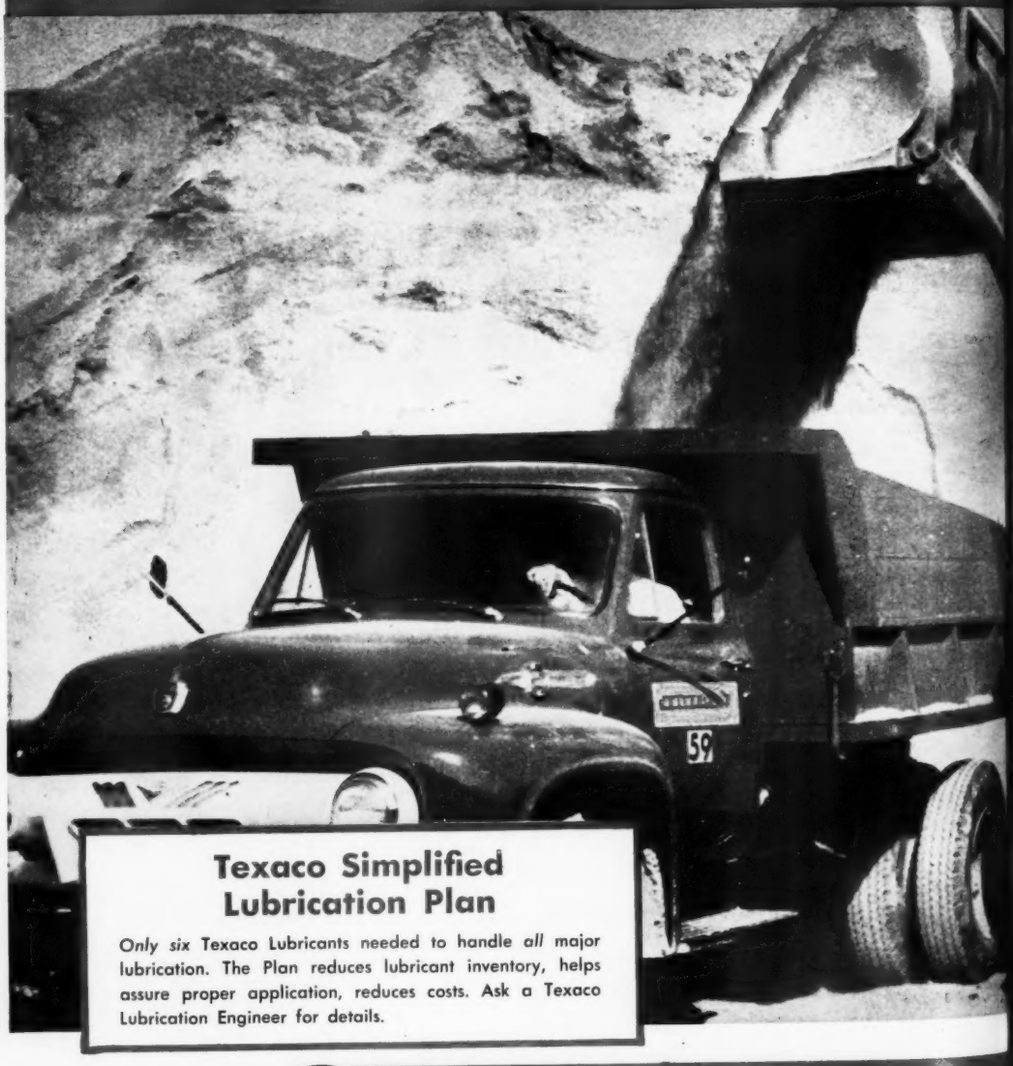
Griffith used its own Cook-built trucks to haul concrete aggregates and sand from the Los Angeles plant of Consolidated Rock Products Co. to the job site. Aggregates and sand were batched by a Johnson plant, and bulk

(*Continued on page 9, col. 4.*)



Three men, who work with the second Jaeger finisher to equalize distribution of the stiff mix, tackle an unusual concentration of concrete at the machine.

How to get MORE WORK FROM HYDRAULIC UNITS



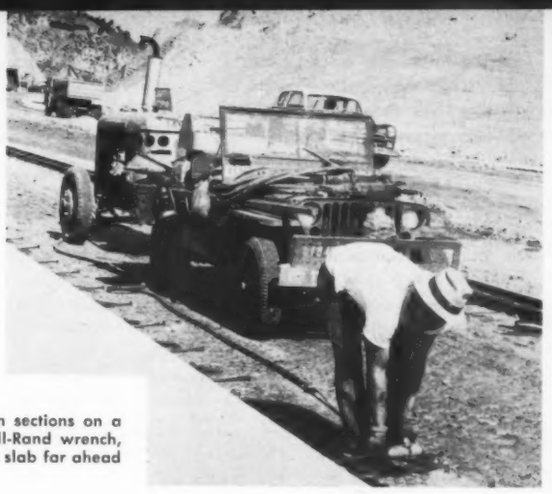
Texaco Simplified Lubrication Plan

Only six Texaco Lubricants needed to handle *all* major lubrication. The Plan reduces lubricant inventory, helps assure proper application, reduces costs. Ask a Texaco Lubrication Engineer for details.

TUNE IN...TEXACO STAR THEATER starring JIMMY DURANTE or DONALD O'CONNOR, on television... Saturday nights, NBC.

TEXACO

CONTRACTORS AND ENGINEERS



A Lima truck crane, left, pulls form pins. This machine also loads form sections on a flat-bed truck for transport to the next paving setup. Right, an Ingersoll-Rand wrench, powered by the I-R compressor pulled by the jeep, screws dowel pins into slab far ahead of the paving train.

BY KEEPING hydraulic systems free from sludge, rust and foam, you eliminate a major cause of unscheduled stoppages, keep your machines on the job. You can do this by using *Texaco Regal Oil R&O* as your hydraulic medium.

Tests prove that *Texaco Regal Oil R&O has more than ten times the oxidation resistance* of ordinary turbine-quality oils. Users report it has an exceptionally long service life, even under severe conditions, and does a remarkable job of preventing sludge, rust and foam.

Texaco Regal Oil R&O thus assures clean, trouble-free operation, longer life for pumps and other parts, lower maintenance costs. There is a complete line of *Texaco Regal Oils R&O* to meet the requirements of all types and sizes of hydraulic equipment, all operating conditions.

In air compressors, too, *Texaco Regal Oil R&O* assures clean, efficient, low cost performance. It keeps compressors and systems free from harmful deposits and rust . . . lines clear, piston rings free, valves clean.

Texaco Regal Oil R&O is one of the six fine products in the Texaco Simplified Lubrication Plan—all you need to handle all your major lubrication. Let a Texaco Lubrication Engineer give you full information. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

☆ ☆ ☆

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

(*Continued from page 8, col. 1.*)

cement was weighed from a portable silo built in Griffith's shop. From four to six of the Cook-built batch trucks, equipped with Ford and Reo transmissions, each hauled five 1 1/3-cubic-yard batches to the paver.

The Koehring 34-E Twinbatch paver operated outside the lane being paved, taking its mixing water from a 1,500-gallon trailer which it towed along. From time to time, this trailer was refilled from a 4,000-gallon truck-mounted tanker by means of a Gorman-Rupp 2-inch pump.

The paver was kept working constantly to produce an average of 3,000 linear feet of 12-foot-wide lane during a shift. Equipment in the concrete-processing lineup was selected for its ability to keep up with the paver. The first in line was a Jaeger spreader, which knocked down and spread the stiff concrete. Two Viber electric vibrators on the rear of the spreader worked through concrete along the edges of the forms. A Jaeger-Lakewood finisher, equipped with two horizontal screeds and a positive tamping bar, followed. The original tamper and its spring mounting had been removed by Griffith's shop crews, and in its place a Hercules engine with a direct eccentric connection to a full-working timber tamping bar had been installed.

From the finisher, a drag was placed down against the concrete about every 100 feet. This showed whether or not the slab was true for its entire width. Behind this finisher came a joint bridge carrying workmen who inserted a steel bar in every 60 feet of concrete to form a contraction joint. Work with edging tools, and some work with a longitudinal float followed, but the main job of finishing off the slab to a smooth and dense surface was done by a Madsen-built Johnson longitudinal float finisher. Making repeated trips down the slab, the unit worked the concrete down between the forms. This operation was carefully checked, and oak screeds were used where possible since knots in pine stand out as the wood wears down.

The final finish was applied by a burlap strip dragged behind the Johnson finisher. As soon as the slab had

achieved initial set, a Techkote Co. spray truck applied Sealtex curing solution. The material, having a natural gray pigment which leaves concrete light-colored and without excessive glare, was applied by one man who operated his own equipment and kept the job supplied with Sealtex and Durair air-entraining agent.

Operating as part of the curing and joint-cutting subcontract given to Techkote Co., Inglewood, Calif., was the Concut Jointmaster 2-blade saw which cut the 15, 30, and 45-foot joints. The saw averaged a 3,000-foot run in about seven hours.

Personnel

Field supervision for Griffith Co. was done by general superintendent Joe Porsche, who handled the company's Los Angeles area construction. W. D. McCray, project superintendent, was assisted by Art Hill, assistant superintendent; J. D. Martin, paving foreman; and Dan Wright, master mechanic.

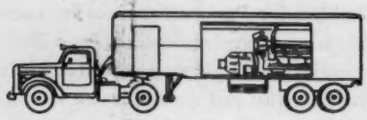
For the California Division of Highways, the resident engineer was Robert H. Butler. He was assisted on the paving work by Robert C. Klesges, and G. L. Lundstrom. THE END

A list of coming conventions of interest to our readers appears on page 139 of this issue.

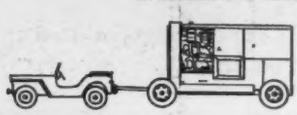
CATERPILLAR ANNOUNCES

A NEW LINE OF PORTABLE ELECTRIC SETS

Dependable electric power—where it's needed, when it's needed



CAT* Portable Electric Sets are now available in 9 models, 30 to 315 KW



USE CAT PORTABLE ELECTRIC SETS

- When you're on a remote location with no high line power available.
- When there are delays in running power lines to your job.
- When power failures cause you to lose working time.
- When "demand" charges eat up profits.

These Caterpillar Portable Electric Sets are ready to serve you in emergency or full-time operation. They are available in all the usual voltages, 50 or 60 cycle.

Each is a complete unit, with cooling system, fuel tank and switch-gear, mounted on skids, semi-trailer or full trailer, ready to be moved anywhere you need it at a moment's notice. Even the biggest trailer-mounted set is well within highway weight and size restrictions.

The units are easy to hook up, easy to operate. They deliver steady voltage and require a minimum of supervision. Low fuel and maintenance costs are added advantages.

In this new line of portable electric sets, there's one that will exactly fit your needs. Get complete information from your Caterpillar Dealer. Call him today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

THE NEW STANDARD OF PORTABLE ELECTRIC POWER

CATERPILLAR TRACTOR CO., Peoria, Illinois, U. S. A.

Please send me further information on Cat Portable Electric Sets.

Name_____

Company_____

Street_____

City_____ Zone____ State_____

A. Bentley & Sons Co., Toledo, Ohio, contractor, uses a new Syntron diesel pile hammer to drive 40-foot-long steel sheet piling without damaging or flanging the ends of the sheets. The Syntron is a completely self-contained unit which eliminates the cost of auxiliary equipment.

Case history

Diesel hammer eliminates cost of extra equipment

A Toledo, Ohio, contractor cut pile-driving costs by one-third on a recent project by using the new Syntron diesel pile hammer. The completely self-contained machine, which eliminates steam boilers, air compressors, and other auxiliary equipment, also uses approximately one-fifth the amount of fuel required for other types of hammers, it is reported.

A. Bentley & Sons, Toledo, drove 40-foot-long sheet steel piling three sheets at a time with the new hammer. The ends of the piling were not damaged or flanged by the hammer, as the unit actually pushes the piling instead of driving it. The hammer burns diesel fuel in the cylinder to drive the piston or ram down against an anvil head, and the impact energy is in turn transferred from this anvil head to the piling.

Besides this advantage over the old-type drop hammer, the new unit is more simply operated because of its hydraulic controls and burns a cheaper diesel fuel, according to J. H. Bruere, vice president and general superintendent of the Bentley Co.

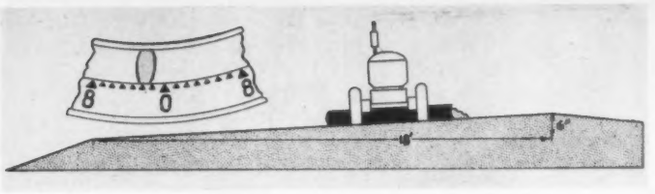
Detroit Diesel adds five representatives

Five more sales and service representatives have been added to the administrative field organization of the Detroit Diesel Engine Division of General Motors Corp., Detroit, Mich.

The sales representatives and the territories they cover are: G. R. Holly, Arizona, New Mexico, Utah; Stanley Partel, North and South Dakota, Minnesota, and eastern Iowa.

Service representatives are K. L. Post, who will cover Colorado, Montana, Nebraska, and Wyoming; Vance Shields, whose territory includes northern Illinois, Michigan, and Wisconsin; and R. A. Stephens in western New York, Ohio, western Pennsylvania, and West Virginia.

Besides cutting fuel costs in half, the Cummins diesel conversion unit and Twin Disc torque converter installed in this locomotive crane have improved its performance for the owner, the Missouri-Illinois Material Co., St. Louis, Mo. Operation is much smoother and maintenance is appreciably simpler.



Case history:
Many hours of hand checking are saved by the Koss Construction Co., Des Moines, Iowa, by using Slope-Meters on its highway-building projects. In cutting subgrade for pavement or finishing shoulder slopes, the contractor has found the instrument a time and money saver. The drawing above shows a grader constructing a crown slope. The section of the Slope-Meter gage shows the position of the indicator ball on this operation. Uniform slopes which eliminate low and flat spots—traps for runoff water—are achieved with the instrument.

Case history

Diesel unit, converter cut fuel cost in half

An old American locomotive crane is giving its owner, the Missouri-Illinois Material Co., St. Louis, Mo., vastly improved service since installation of a Cummins diesel conversion unit working through a Twin Disc torque converter.

Using a 1½-yard bucket, the crane now loads 300 tons of sand an hour on 2½ to 3 gallons of fuel. The cost of diesel fuel for this operation is less than half the cost of coal for the same operation. And on boiler cleaning alone, the conversion unit is saving him $676 a year for labor, the owner estimates.

A swift but soft power buildup during acceleration with no lugging or vibration, and no cable-whipping or bucket-swinging during deceleration are among the aspects of operation with the conversion unit, the owner declares.

Winter concrete symposium to be held in Denmark

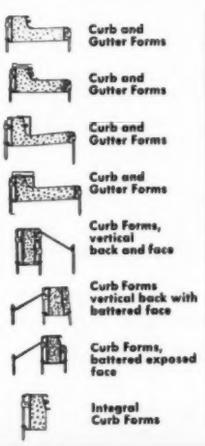
A symposium on the theory and practice of winter concreting has been scheduled for February 13 to 18, 1956, in Copenhagen, Denmark. The work of the symposium will fall under three divisions; theoretical questions, practical considerations, and visits to job sites.

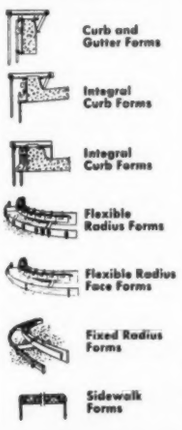
During the first part of each session, the general reporter will give brief review of his paper, and during the second part of each session, other papers related to the subject will be presented. The third part of each session will be given over to a general discussion.

Persons with relevant and hitherto unpublished information who desire to present papers at the sessions, should send triplicate copies of their papers to the organizing secretary in Copenhagen not later than September 15. Papers should be not more than 3,000 words in length and should be accompanied by 200-word summaries in both English and French. Further information about the symposium may be had by writing The Danish National Institute of Building Research, Statens Byggeforskningsinstitut, Borgergade 20, Kobenhavn, K. Danmark.

The BLAW-KNOX *"Complete Package"* of STEEL UNIVERSAL STREET FORMS

meet *any* cross section requirements and *every* construction specification


Curb and Gutter Forms
Curb and Gutter Forms
Curb and Gutter Forms
Curb and Gutter Forms
Curb Forms, vertical back and face
Curb Forms vertical back with battered face
Curb Forms, battered exposed face
Integral Curb Forms



Here's how you *save* money to *make* money on curb, gutter and sidewalk jobs! Blaw-Knox Steel Forms are *standardized* for interchangeability . . . use them in any combination to fit your job. You can use them over and over to save on costly material and expensive carpentry, especially for curved shapes. Blaw-Knox Forms are easy to set, strip and transport, and there's practically no maintenance!

Ask your Blaw-Knox distributor to explain all the other ways a "Complete Package" of forms will do a better job, faster, and at half the cost!

BLAW-KNOX

BLAW-KNOX COMPANY
CONSTRUCTION EQUIPMENT DIVISION
Pittsburgh 38, Pa.
Offices in Principal Cities

See your BLAW-KNOX distributor . . . ask about the "Complete Package" of concrete paving equipment

Blaw-Knox Aggregate Batching Plant

MultiFoote 34E DuoMix Concrete Paver

Blaw-Knox Finishing Machine and Concrete Spreader

Blaw-Knox Bulk Cement Batching Plant

A Wailes vacuum lift, attached to a slab by suction, enables a Bay City truck crane to set one of the tilt-up panels into place on the AiResearch building.

MACHINERY

Vacuum-lift method keeps tilt-up job on schedule

Confronted with the need for lifting 20-ton tilt-up slabs and other heavy units, the contractor on a multimillion-dollar aircraft accessory test facility at Phoenix, Ariz., lost no time in bringing heavy-duty cranes and a vacuum lift to the site to keep the job on schedule. Timing in building this facility for The Garrett Corp's AiResearch Manufacturing Division of Arizona was important because a complicated maze of mechanical and electrical equipment —needed for testing plane parts under simulated flight conditions— had to be installed according to schedule. This alone justified the contractor in bringing in lifting equipment for special jobs or as substitutes for equipment tied up when lifts were scheduled.

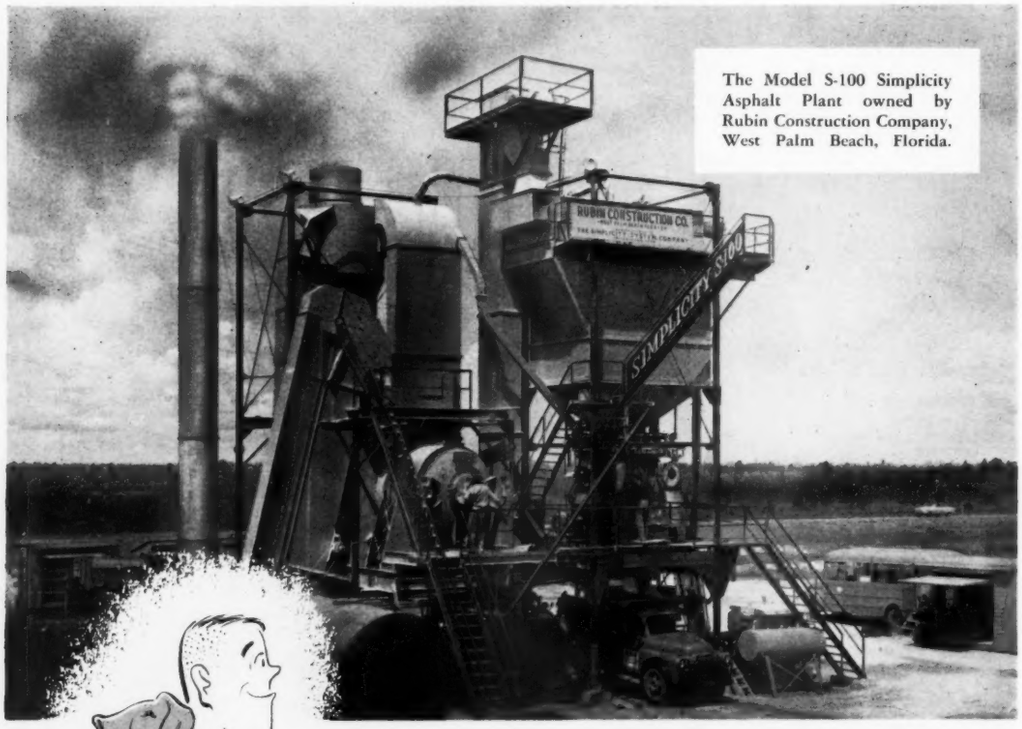
The one-story L-shaped structure and two test-cell buildings, located near the main AiResearch plant, were built by a joint venture firm composed of Utah Construction Co., San Francisco, Calif., and Kitchell-Phillips Contractors, Inc., Phoenix, Ariz. Designed for the testing of aeronautical turbo-machinery components, the new installation will carry on work started in World War II with the development of pressurization equipment for aircraft and complete pneumatic systems for improving the performance of planes.

Heavy slabs

Approximately 130 tilt-up panels were required to outline the buildings. The smallest of these units were 13 feet high, 15 feet wide, 12 inches thick, and weighed a total of 15 tons. The largest slabs—weighing 20 tons each—were 27 feet high, 20 feet wide, and 5½ inches thick. The top of the structure is tied together by structural steel trusswork which carries overhead piping and roof members.

In some cases, the contractor saved space on the permanent concrete slab floors used as a casting area by stacking similar panels six high. After building wood forms and placing concrete from ready-mix trucks owned by Arizona Sand & Rock Co., Phoenix, the contractor applied Thompson's seal or parting agent over the troweled surfaces of the panels. Lifts were then repeated. Concrete for the panels and the floor slab was 3,000-pound material, proportioned with 1½-inch maximum-size aggregate and without special air-entraining agents.

Since the size and weight of the panels made conventional methods of handling difficult, the contractor made arrangements with C. D. Wailes



The Model S-100 Simplicity Asphalt Plant owned by Rubin Construction Company, West Palm Beach, Florida.

LOOK IT OVER BEFORE YOU BUY IT!

The Simplicity Model S-100 Asphalt Plant shown above looks good. But you can't tell about a plant from a picture. You should *see* the plant, inspect it and get reliable answers to your questions about it—from the men who operate and care for it.

Go to see every make of plant on the market and give them the same thorough analysis. Carefully compare them all. There are more asphalt plant manufacturers than automobile manufacturers. Ten in all from coast to coast.

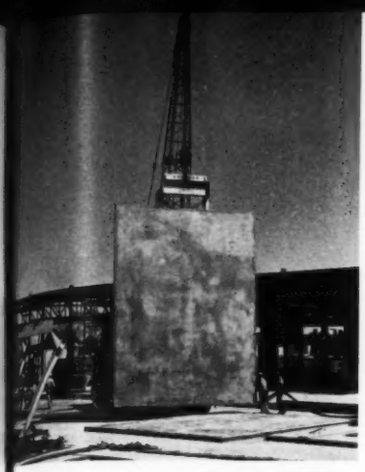
IF YOU CAN FIND A BETTER ASPHALT PLANT THAN SIMPLICITY, BUY IT!

If you don't want to buy it and can show us it is better than Simplicity, we will buy it.

THE SIMPLICITY SYSTEM
FROM BUILDER TO BUYER
BETWEEN MEN WHO KNOW

There's a **SIMPLICITY PLANT NEAR YOU**
On request, we'll be glad to send you the name and location of a nearby installation.

DEPENDABLE
THE SIMPLICITY SYSTEM COMPANY
RIVERSIDE DRIVE PHONE 3-2144 CHATTANOOGA 6, TENNESSEE



The P&H hoists a panel from the floor slab used as a casting bed for the tilt-up units. Panels which were similar were poured six high to save space.

Another panel is set in place by a Bay City crane. The 130 panels enclosing the structural-steel framework of the one-story building weighed from 15 to 20 tons.

Corp., Los Angeles, to rent a Wailes vacuum lift and accessory equipment. This unit, capable of picking up a tilt-up slab by suction, added about 5½ tons to each panel when the lift was made. All panels were raised without mishap by a P&H and a Bay City truck crane.

Heavy special equipment

Although the contract price for this job was several million dollars, about 75 per cent of the figure represents the cost of installing special equipment required for the precise control of temperature, humidity, and air flow in testing equipment.

One of the most unique operations in the AiResearch building is the use of a combination of two stages in the development of a vacuum simulating conditions in the stratosphere and ionosphere. A pair of Babcock & Wilcox type FM medium-pressure steam boilers with 235 pounds of operating pressure start the development of the vacuum by feeding two ejectors which discharge to the barometric condenser at the top of the plant. Each boiler is capable of delivering 28,000 pounds of steam per hour at rated pressure. The second stage is developed by two Ingersoll-Rand vacuum pumps which pull the remaining pressure out of the barometric condenser to achieve an almost complete vacuum. Other equipment includes compressed-air heaters which have a tremendously high thermal input, and refrigeration equipment capable of dropping air temperatures well below zero.

Much of the mechanical equipment is being furnished to the job by the U. S. government. As it comes in, it is scheduled for placement along with units included in the construction contract. The time-saving made by the contractor on excavation and tilt-up phases of the job is permitting all installation work to move smoothly.

Personnel

The job was designed for AiResearch by the Los Angeles consulting firm of Ralph M. Parsons Co., which is represented in the field by resident engineer C. F. Metzler. Utah Construction Co. is represented by Robert S. Hardie. Kitchell-Phillips Contractors, Inc., the firm actually doing the work, is represented by project manager Eldred R. Peterson. Jack C. Beck is office manager. THE END

S. L. Martinez, leading concrete contractor, Los Angeles, says: **"We're getting**

400% MORE SERVICE . . .

from these new! improved!

WHITEMAN SILVER STREAK TROWELS"

Leading contractors from coast to coast report four times more surface coverage with the new, improved Whiteman Silver Streak Floating-Finishing Machine Trowels. Made of extremely hard, durable steel, especially engineered to rigid Whiteman specifications. Designed to produce smoother, better finishing with any Whiteman Floating-Finishing Machine.

For maximum efficiency and economy, be sure to insist on Whiteman Silver Streak Trowels and genuine Whiteman parts!

Whiteman

THE LEADER IN CONCRETE EQUIPMENT

Whiteman Manufacturing Co.
3249 Casitas Ave., Dept. CE
Los Angeles 39, Calif.

Please send prices, literature and name of distributor for ☐ Vibrators, ☐ Screeding Machines, ☐ Power Buggies, ☐ Floating-Finishing Machines.

Name_____
Firm_____
Address_____
City_____ Zone____ State_____

NAMES IN THE NEWS

New hot-mix group elects Detroit man

The National Bituminous Concrete Association, holding its first meeting recently at the Conrad Hilton Hotel in Chicago, elected Sheldon G. Hayes of the Cadillac Asphalt Paving Co., Detroit, Mich., to head its charter slate of officers.

Others elected at the organizational session include Bryand M. Collins of Collins Construction Co., Austin, Texas, vice president, and Allen Snyder of Hefler-Snyder Co., Garwood, N. J., secretary-treasurer. Nine regional chairmen were also named to the board of directors.

Made up of hot-mix asphalt paving contractors, the new organization has as its purpose to promote and further the use of bituminous-concrete pavements.

Wisely becomes ASCE executive secretary

A 19-year member of the American Society of Civil Engineers, William H. Wisely, last month took office as executive secretary of the organization.

A civil engineering graduate of the University of Illinois, Mr. Wisely has worked as assistant engineer for the

William H. Wisely, executive secretary of ASCE.

Illinois State Water Survey, assistant sanitary engineer for the Illinois Department of Public Health, and engineer-manager for the Urbana and Champaign Sanitary District. His last position before becoming executive secretary of the ASCE was as executive secretary and editor of Sewage and Industrial Wastes Associations.

Mr. Wisely replaces Col. William N. Carey who retired.

Pennsylvania promotes two highway officials

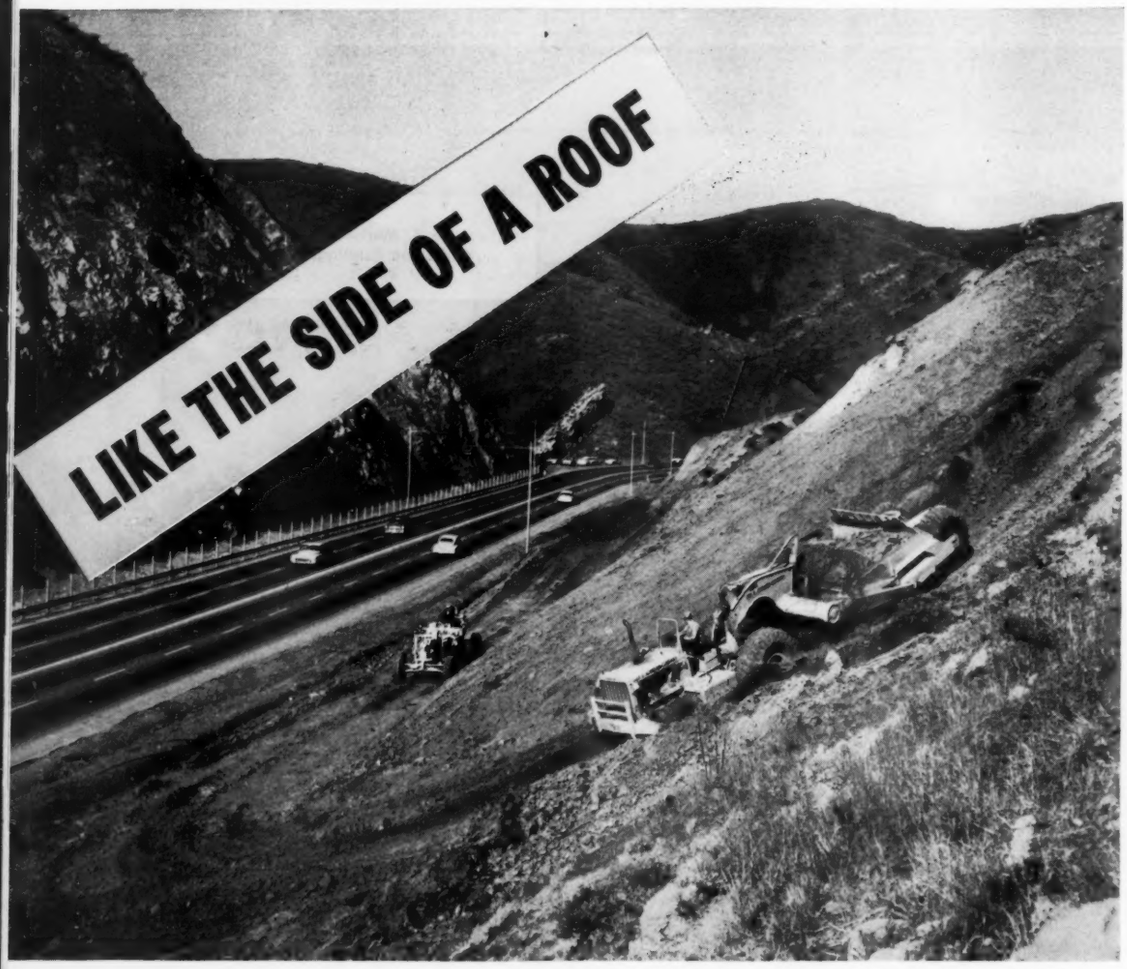
Two veteran officials of the Pennsylvania Department of Highways have been promoted by the state. C. Owen Beckley, former district engineer at Montoursville, will head the expanded planning division of the department. Walter E. Fries, who had been assistant district engineer at Montoursville, will succeed him.

Delaware highway post assumed by McKendrick

Duties of the chief engineer of the Delaware State Highway Department have been assumed by Walter B. McKendrick, Jr., recently appointed to succeed Col. W. A. McWilliams. Col. McWilliams has retired after 31 years with the department to accept a position with a private contracting firm.

Mr. McKendrick served as assistant chief engineer of the state highway department from 1943 to 1951 and from 1953 until his recent new appointment. He joined the department in 1936 as a member of a survey party, and subsequently rose through the ranks.

Walter B. McKendrick, Jr., new chief engineer of the Delaware State Highway Department.



On the Waldo Grade project, at the northern end of San Francisco's Golden Gate Bridge, Guy F. Atkinson Company contracted to move 1,500,000 cu. yd. of earth on some really tough grades.

To widen Rt. 101 to a six-lane highway a rocky hillside had to be cut away and the heavy material hauled half a mile down to the fill, in a deep ravine.

Those 20 per cent grades were like the side of a roof. But Atkinson's fleet of CAT* DW20 Tractors and No. 20 Scrapers got the job done. They hauled big loads down the steep slopes and switchbacks, then made their way to the top again after dumping. There have been few more convincing tests of the DW20's stamina and lugging power.

Eleven of the big wheel rigs were used on this $4,000,000 contract. Other Caterpillar equipment included D8 Tractors for push-loading and bulldozing, No. 12 Motor Graders to work on the haul roads and Caterpillar Diesel Engines powering compressors. Many successful contractors believe in standardizing on the big yellow machines—service and maintenance are simplified, parts are often interchangeable, and operators are familiar with the equipment. Caterpillar dependability, freedom from down time and long work life are clinching arguments for standardization.

Your Caterpillar Dealer will demonstrate the big production and low operating cost of the DW20 Tractors, and he'll back every machine he sells with on-the-job service and genuine Cat parts.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE

A weed-control spray crew of the Ohio Department of Highways at work on State Route 37. Herbicide is sprayed from a 1,000-gallon tank, mounted on a Ford truck, at an average rate of 50 gallons per mile for one side of the road.

Case History

Weed-control spraying cuts highway mowing

With an energetic chemical weed-control program, the Ohio Department of Highways has made a definite reduction in its roadside mowing operations. Both state forces and contractors handle the spraying of 2,4-D, and mixtures of 2,4-D and 2,4,5-T. A typical contract specifies spraying the entire roadside—an area of about one acre to the mile—three times a year. The state forces follow a similar routine, varying the number of sprayings as the growth warrants. As a result of the spraying, the department has been able to reduce the average number of mowings each year by one.

The four-fold object of the herbicide weed-control program is:

To eliminate poison ivy, ragweed, and other noxious weeds from the right-of-way, and to prevent their spread to adjacent lands. The ragged and unsightly growth of such weeds is the chief reason for one or two mowing operations each season.

To reduce high-cost hand mowing over areas inaccessible to power mowers.

To clear and maintain ditches and drainage structures and keep them free of clogging brush and weeds.

To open and maintain adequate sight distances.

Prior to the herbicide program, mowing in a selected 20 counties averaged 3.25 mowings per season on primary roads and 2.68 mowings on the secondary roads. Since the program was initiated, the mowing on roadsides sprayed once was reduced to 2.5 mowings on the primary and 2.09 mowings on the secondary. On roadsides sprayed twice or more, mowings were further reduced to 2.25 on the primary and 2.04 on the secondary.

In the case of secondary roads sprayed twice or more, the herbicide program may reach a "point of diminishing returns" where there is little or no reduction in mowing costs, nor even a monetary advantage the first year. Savings may result, however, in future years from the elimination of brush and other rank weed growths from the right-of-way.

Wilbur J. Garmhausen, chief landscape architect of the Ohio Department of Highways, is directing the roadside program. James R. Riddle and Frank J. Cope are assistant landscape architects.

Handbook treats problems of drainage construction

The design and engineering application of a number of drainage and construction products is given comprehensive technical treatment in "Handbook of Drainage and Construction Products", written by engineers of Armco Drainage & Metal Products, Inc., Middletown, Ohio.

In ten sections and 64 concisely written chapters, the book covers strength research and design, durability studies and design, economic factors, design principles and practice, subsurface drainage, special drainage problems, and installation instructions. A variety of tables, an appendix summarizing research on underground conduits, and a 17-page general index add to the book's value as a reference source.

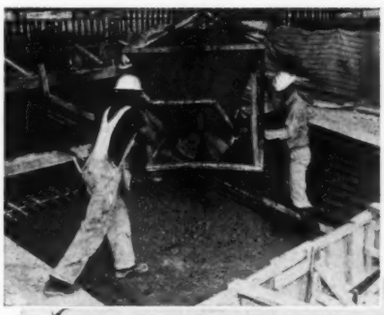
"Handbook of Drainage and Construction Products" may be purchased for $5 postpaid by writing to Armco Drainage & Metal Products, Inc., Middletown, Ohio.

E. V. John named Iowa right-of-way engineer

Effective the first of last month, E. V. John was named right-of-way engineer for the Iowa State Highway Commission, Ames, Iowa. Formerly assistant right-of-way engineer, he succeeds W. P. Nichols.

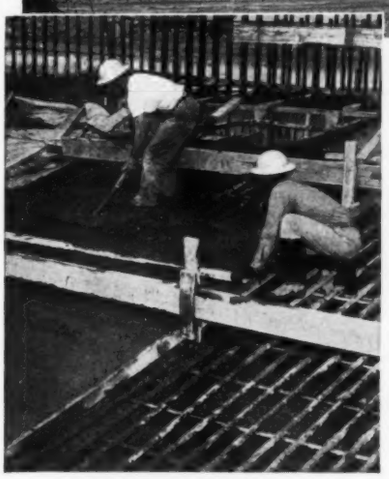
With the Iowa commission since 1924, Mr. John had served as assistant right-of-way engineer since 1948.

1,300-foot concrete spillway easy to place with DURAPLASTIC*



GOOD WORKABILITY of mixes made with Atlas Duraplastic Cement makes possible fast, easy placement . . . helps work progress smoothly and rapidly on this spillway structure.

Spillway structure, Belton Dam, near Belton, Texas.
Engineer: Corps of Engineers, U. S. Army.
Prime contractor: J. W. Moorman & Son, Belton, Texas.
Sub-contractor: C. H. Harrison Co., Waco, Texas.



PLASTIC, COHESIVE concrete mixes made with Atlas Duraplastic Cement have more uniform distribution of aggregates . . . give finished concrete greater durability and improved surface appearance.

● In event of a record-breaking flood, this emergency spillway at Belton Dam, near Belton, Texas, will act as a giant "safety valve" and carry off excess flood water before it can damage the dam. Job specifications for the spillway wall called for workable, easy-to-place concrete. The choice for cement was Atlas Duraplastic.

"We chose Atlas Duraplastic Cement to get a more workable, uniform mix," reports E. M. Harrison of the C. H. Harrison Co., Waco, Texas. "Duraplastic Cement makes possible faster, easier placement—eliminates honeycomb in low slump concrete."

Other contractors, too, have come to count on the advantages of Atlas Duraplastic air-entraining portland cement. In structural and mass concrete, the increased workability of Duraplastic-made mixes aids proper placement, improves surface appearance and fortifies finished concrete against freezing-thawing weather.

On paving jobs, Atlas Duraplastic makes a more plastic, more cohesive mix which resists segregation . . . dumps, spreads and finishes easily. Finishers can work close behind the paver because Duraplastic Cement minimizes bleeding.

YET DURAPLASTIC COSTS NO MORE than regular cement—requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. Write for descriptive booklet. Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, New York.

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

**"Duraplastic" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.*

ATLAS® DURAPLASTIC
AIR-ENTRAINING PORTLAND CEMENT

CE-D-173

Makes Better Concrete at No Extra Cost

UNITED STATES STEEL HOUR—Televised alternate weeks—See your newspaper for time and station

Manned by a three-man crew, the Pioneer 51 asphalt plant works above rated capacity to supply hot-mix to the job. *Ray Day Photos*

MACHINERY

Small asphalt plant lowers cost of two-mile pavement

Depending on a seven-man crew for paving and bituminous-concrete production, two New Mexico contracting firms earlier this year completed a 5,000-ton paving job which boasts a minimum in labor costs and a maximum in plant efficiency. The Pioneer 51 hot plant used, rated at 65 tons per hour, consistently topped the 80-ton-per-hour mark on the job, and even turned out as much as 83 tons of material per hour.

The contract work, located on a 2-mile stretch of U. S. 80 near Las Cruces, N. Mex., was divided between United Paving Co. and Skousen-Hise Contracting Co., both of Albuquerque. Skousen-Hise, prime contractor on the four-lane divided road, graded the section, constructed curbs for the median, produced and installed the flexible subbase material, crushed mineral filler, and rolled the pavement. United Paving Co. dried the aggregates, did the mixing, and delivered and laid the material. Its subcontract price was $2 per ton. The Skousen-Hise price was $3.36 per ton, excluding asphalt.

The road's new 24-foot lanes and 10-foot shoulders are part of an improvement program on U. S. 80 between Las Cruces and Lordsburg. This particular section was one of the last remaining bottlenecks in the road. Future construction will split the highway where it enters Las Cruces, drain traffic across town on one-way streets, and bring it to the newly-paved section.

Single hot plant

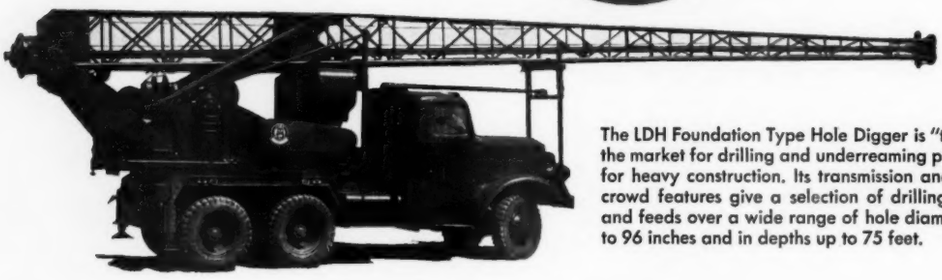
The portable Pioneer 51 plant used for the job was demobilized from its previous setup in about four hours and transported to the new site quickly and easily. There, a haul road under the pugmill dump location was bulldozed into the desert floor, and a timber bulkhead was set up to prevent dirt from caving into the excavation. The pugmill was set in place and leveled on crib timbers. The other plant components were then set around the pugmill.

Field alterations provided the plant with flexible asphalt line connections, crib timbers lettered to denote the part of the plant they support, and rubber-tire mounting for all units. The Murphy-EM diesel electric gen-

The World Over . . .

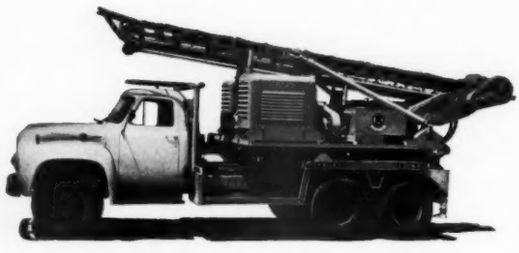
WILLIAMS HOLE DIGGERS are on the job..

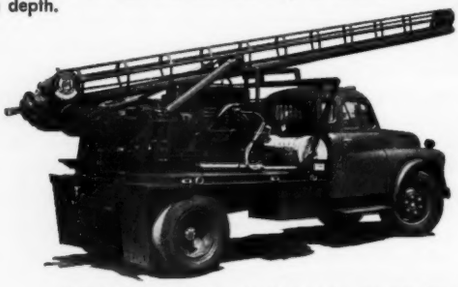
- **EFFICIENTLY**
- **ECONOMICALLY**



The LDH Foundation Type Hole Digger is "tops" on the market for drilling and underreaming pier holes for heavy construction. Its transmission and power crowd features give a selection of drilling speeds and feeds over a wide range of hole diameters up to 96 inches and in depths up to 75 feet.

The Williams LDHU Digger is a big, fast and rugged machine for electric power transmission line construction. Powered by a 500 cubic inch class engine or two 254 cubic inch engines with torque converters. The LDHU has six forward auger speeds and two reverse. It is specifically designed for drilling 12 thru 96-inch diameter holes up to 20 feet in depth.





The ADH Model of Williams Hole Digger is designed for rapid drilling of electric line pole holes, light foundation piers, soil exploration and other jobs that require holes from 8 inches through 36 inches in diameter. It is furnished in stock models for 10′, 12′, 20′, 25′ and 30′ of drilling depth.

ALL MODELS OF WILLIAMS DIGGERS MAY BE EQUIPPED WITH WIGGLETAIL OR TURNTABLE PLATFORMS FOR RAPID SPOTTING OVER AN EXACT DRILLING SITE.

HUGH B. WILLIAMS MANUFACTURING CO.
8330 LOVETT ST. • DALLAS, TEXAS

As the Barber-Greene finisher lays a 24-foot-wide lane, a Galion 10-ton steel-wheel roller compacts the asphaltic concrete to 96 per cent density.

A Bros rubber-tire roller compacts the 1-foot tapered edge of the roadway after steel-wheel rolling is completed on the lane.

erating set powering the plant was mounted on a truck which towed a small trailer carrying parts and supplies.

A number of features, such as a three-way valve in the asphalt line, increased the plant's operating efficiency. This valve made it possible for the plant to be calibrated exactly so that one test batch could be run and the necessary samples extracted. This eliminated the need to waste several truckloads of paving material in trial mixing.

One of the units making for economical operation was a Childers circulating oil heater which operated on about six gallons of diesel fuel per hour. By means of a Standard C-9 turbine oil circulated in the coils, the unit heated asphalt in the tanks to between 380 and 390 degrees F. According to Joe Knight, general superintendent for United Paving Co., the circulating oil heater will bring a tank of asphalt in an air temperature of 40 degrees to an application temperature of 270 degrees in about 72 hours. The heater was set to cycle in a band of about eight degrees so that the 85 to 100-penetration bitumen in the two 7,500-gallon storage tanks remained at a near constant temperature.

The plant maintenance cost of less then $250 per month has been held down partly by the burner fuel used for the oversize dryer. Knight paid about 2 cents additional per gallon to get No. 4 special burner oil, a fuel having better flash characteristics than crude bunker grade fuel. The best grade of diesel fuel was used in the Murphy-powered generating set. This set operated on between 9 and 10 gallons of fuel per hour while the plant worked above its rated capacity.

The labor force at the plant consisted of a dryer man, pugmill operator, and oiler. The bulldozer operator who shoved aggregate to a feeder hopper was a Skousen-Hise employee, and his labor was not taken into account on the subcontract.

Plant production

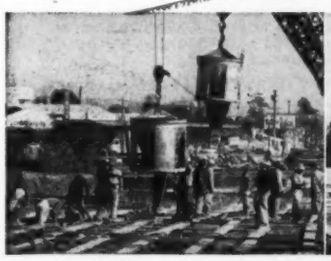
Aggregates and sand for the mix were produced by a Skousen-Hise Cedarapids Junior Tandem crusher

(Concluded on next page)

it takes

SPECIAL DELIVERY

on concrete jobs



SPECIAL DELIVERY ELIMINATES RAMPS

In building construction, Gar-Bro Concrete Buckets save the cost of building ramps and scaffolds.

SPECIAL DELIVERY PREVENTS DELAYS

Delay of truck mixers, and placing and finishing crew are eliminated with Gar-Bro Hoppers.

SPECIAL DELIVERY 5 TIMES FASTER

Fast shuttle speeds over longer distances prove economy & high hourly capacity of Gar-Bro Power-Carts.

SPECIAL DELIVERY IS A 1-2-3 OPERATION

This Gar-Bro Hopper is serving as intermediate concrete storage between bucket and carts.

to increase profits

EVERY CONCRETE JOB requires *special delivery* methods for handling and placing concrete *profitably*. It takes planning and it takes careful selection of equipment of the right capacity. That's the big reason why you should depend upon Gar-Bro. For only Gar-Bro has a complete line of concrete handling equipment in all sizes and capacities.

Only Gar-Bro dealers specialize in concrete handling and placing methods and equipment. See your Gar-Bro dealer, consult him about your next job.

GAR-BRO MANUFACTURING CO • Los Angeles, Calif. • Peoria, Ill.
General Offices: 2415 E. Washington Blvd., Los Angeles 21, California

GAR-BRO

Ask your dealer for the Gar-Bro Manual . . .

the world's most complete line of

CONCRETE HANDLING EQUIPMENT

EQUIPMENT GAR-BRO ENGINEERING SERVICE

DEALERS

ALA. Birmingham—Construction Equip. Co.
Montgomery—Ray Brooks Mach. Co., Inc.
ARIZ. All Equipment Dealers
ARK. Little Rock—Lyons Machinery Co.
CALIF. Los Angeles—Carlinghouse Brothers
San Francisco—Edward R. Bacon Co.
COLO. Denver—Western Machinery Co.
CONN. Hartford—The Bottum-Peloubet Co.
New Haven—The W. I. Clark Co.
FLA. Jacksonville—M. O. Hooly & Sons, Inc.
Miami—Stanford Machinery Inc.;
Nolf Machinery, Inc.;
Orlando—Highway Equipment & Supply Co
Spence Deal Mach. & Supply Co.
GA. Atlanta—Tractor & Machinery Co., Inc.
IDA. Boise—Intermountain Equipment Co.
ILL. Chicago—Gill Sears Equip. Co.;
Casey & Bennett, Inc.;
Western Contractors Sup. Co.
IND. Ft. Wayne—Karle Bros., Inc.
South Bend—General Equip. & Mach. Co.
IOWA Cedar Rapids—Martin-Emers Tr. & Eq. Co
Sioux City—Pearse Industrial Supply Co.
Waterloo—Waterloo Mind & Equip. Co.
KY. Danville—Central Supply & Equip. Co.
LA. New Orleans—Wm. P. Sugg Equip. Corp.
ME. South Portland—Stanley & Calligan Co.
MD. Baltimore—Free State Equip. Co., Inc.
Beltsville—Power Equipment, Inc.
MASS. Springfield—Eastern Equip. Sales, Inc.
West Bedford—Bedford Equip. & Sup. Co.
MICH. Detroit—E. G. Mueller Co.;
W. E. Phillips Equip. Co.;
Schuster Equip. Co., Inc.
MINN. Minneapolis—Minneapolis Equipment Co.
MO. Kansas City—Pathhoover Mach. Co.
Machinery & Sup. Co.;
G. W. Van Keppel Co.
St. Louis—G. K. Avery Co.;
Hennessey-Ferrezzi Mach. Co.;
Allied Const. Equip. Co.;
Machinery, Inc.;
Geo. F. Smith Co.
MONT. Kalispell—Perry Machinery Co.
NEB. Lincoln—Midwest Mach. & Supply Co.
Omaha—Anderson Equip. Co., Inc.
NEV. Las Vegas—Inland Service & Supply Co.
Reno—Sierra Machinery Co., Inc.
N. H. Concord—New Hampshire Equipm. & Mach. Co
N. J. Hillside—H. J. Seubek Co.
N. M. Albuquerque—Contractors' Eq. & Sup. Co.
N. Y. Buffalo—J. H. Welch Co., Inc.
Long Island City—Ed. C. Flaherty Co.
New York City—Mahoney-Clarke, Inc.;
Mott Haven Equip. Co., Inc.
Rochester—Rochester Road Equip., Inc.
Syracuse—Finger Lakes Sales Corp.
N. C. Greensboro—E. F. Craven Co.
N. D. Fargo—Midwest Equipment Co.
OHIO Cincinnati—The Rede-Finn Co.
Cleveland—Ohman Engineering Co.
Columbus—S. W. Barman Co.
Toledo—Howard T. Moriarty Co.
OKLA. Enid—Sparks Equipment Co.
ORE. Portland—Loggers & Contractors Mach. Co.
PA. Philadelphia—Austin Supply Co., Inc.
Pittsburgh—G. K. Crawford Equipment Co.;
Dravo-Doyle Co.
Wilkes-Barre—Standard Equipment Co.
R. I. East Providence—Builders Eq. & Sup. Co.
S. C. West Columbia—Van Lett, Inc.
S. D. Sioux Falls—Forest Equipment Co.
TENN. Chattanooga—Nixon Mach. & Supply Co.
Memphis—Tri-State Equip. Co., Inc.
Nashville—C. H. & L. Machinery Co.
TEX. Dallas—Conley-Lott-Nichols Mach. Co.
El Paso—Contractors Equip. & Supply Co.
Houston—H. E. Hewett & Co.
Lubbock—Conley-Lott-Nichols Co.
San Antonio—Contractors Mach. Co.
Waco—Richards Equipment Co.
UTAH Salt Lake City—Arnold Machinery Co.
VT. Barre—Interstate Equip. & Supplies Co.
VA. Roanoke—Southern Mach. & Supply Co.
WASH. Seattle—A. R. Cox & Company
Spokane—Construction Equipment Co., Inc.
W. VA. Charleston—Machinery, Inc.
WIS. Green Bay—Bolduc Mach. Co., Inc.
Milwaukee—Bostick Equip. Co.; Hunter Tractor & Mach. Co.; Prime Equ., Inc.
WYO. Casper—Binder Tractor & Equipment Co.
Cheyenne—Morrison Machinery Co.

(*Continued from preceding page*)

in a wash not far from the asphalt plant. These materials were trucked to the plant, dumped into separate piles, and bulldozed to an apron-type feeder. The feeder led to a cold elevator which dropped the material into the plant dryer. After being heated to about 325 degrees F, the rock particles passed through a hot elevator to the screening system, where they were classified for three-bin separation. No. 200-mesh fines were separated from the smoke and returned to the hot elevator by a screw conveyor. No excess fines had to be wasted.

Asphalt cement of 85 to 100 penetration was trucked from a refinery at Artesia, N. Mex., by Ferguson-Steers of Albuquerque. Arriving at the plant at flow temperature, it was pumped to alternate tanks so that one tank could be used constantly for heating. Approximately 6.3 per cent of this material was used in the mix, which left the plant at about 275 degrees F and reached the job at between 260 and 265 degrees F. A small fleet of rented dump trucks was enough to keep the plant working at top speed while the mix was hauled to the site.

Small laydown crew

The laydown crew, made up of a machine operator, a screed man, and a raker, laid the 2-inch compacted hot-mix in a 24-foot-wide surface course with a 1-foot tapered edge on each side. The pavement was put down on a 6 to 9-inch flexible base which had been rolled, primed with 0.4 gallon of MC-1, and covered with 0.05 gallon of 80 to 100-penetration asphalt. A Barber-Greene finisher laid the material in two strips, and a string line on the first lane aligned the strips. The joint between the lanes was given an application of 85 to 100-penetration asphalt so that the material developed a good bond. A Galion 10-ton tandem steel-wheel machine rolled the lanes to the specified 96 per cent density, and a small Bros pneumatic roller compacted the tapered edge. The job does not call for a seal coat. A Jaeger 70-cfm air compressor, a paver breaker gun, and a chisel blade were used to cut crosswise construction joints.

Paving was done on a 5-day week, 7½-hour-day basis. One man worked the night shift, taking care of repairs, plant maintenance, and cleanup, and firing the plant at 8 o'clock every morning. Before 8:30 a.m., the first loads of material were on their way to the paving site.

THE END

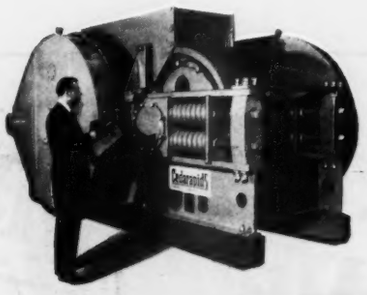
BIG MACHINES

BIG PROFIT

BIG PRODUCTION

Cedarapids

Built by IOWA

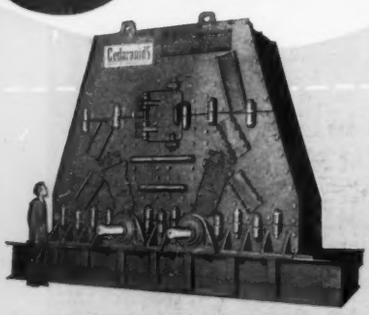


ROLL CRUSHERS

This new 55" x 30" Roll Crusher is a *big* producer for secondary crushing operations. Large diameter of the rolls handles exceptionally large feed. With 20% wider roll shells, capacities range up to 520 tons per hour, depending upon conditions.

8 ROLL CRUSHER SIZES MEET EVERY NEED

16" x 16"	30" x 18"	30" x 25"	40" x 24"
24" x 16"	30" x 22"	40" x 22"	55" x 30"

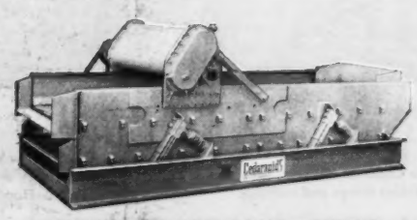


DOUBLE IMPELLER IMPACT BREAKERS

This big Breaker reduces rock from 53" x 60" down to 3" minus in one pass and turns out from 500 to 800 tons of ideal cubical shaped aggregate per hour!

AVAILABLE IN 7 SIZES

For portable or stationary plants	For stationary applications
Model 2222	Model 4350 Standard
Model 3042	Model 4350 Heavy-Duty
Model 3645	Model 5360 Standard
	Model 5360 Heavy-Duty



HORIZONTAL VIBRATING SCREENS

The *horizontal* position of the screen cloth openings permit *more* of the correct size material to go through the screen, yielding 20% to 30% more accurate gradation and more yards per hour. A horizontal screen provides as much as 12½% greater screening area than an inclined screen of the same length! You can use a smaller screen, get the same capacities as with a larger inclined screen.

Available in single, double and triple deck models in sizes ranging from 3' x 8' to 48" x 14'.

JAW CRUSHERS

The big 32" x 40" Jaw Crusher is the ideal unit for big primary crushing operations because it's engineered in every detail to give *extra* capacity with smooth, steady performance and low maintenance and operating costs.

AVAILABLE IN 12 SIZES

10" x 16"	15" x 24"	22" x 25"
10" x 20"	15" x 36"	22" x 36"
10" x 24"	18" x 24"	25" x 40"
10" x 36"	18" x 36"	32" x 40"

SYMONS® CONE CRUSHERS

Supplied as individual units or in Cedarapids Secondary Plants and Scalping Units. Nordberg-built Symons Cones give you big-volume, low-cost finished crushing of even the hardest or most abrasive rock or gravel to uniform, finely-crushed aggregate.

SIZES AVAILABLE

22", 2', 3' and 4'

SYMONS—*A registered Nordberg trademark*

IOWA MANUFACTURING COMPANY

CEDAR RAPIDS, IOWA, U.S.A.

Case history

Power buggies handle all building materials

By using power buggies for handling building materials as well as delivering and placing concrete, T. S. Willis Co., Janesville, Wis., contractor speeded up work (and cut costs) on a big plant project at Janesville.

Project superintendent Harold Swanstrom used as many as five Prime-Movers to handle materials on this job. The power buggies picked up concrete from the transit mixers and placed it for the footings, and also delivered concrete to the second floor by means of a ramp. Concrete was placed at the rate of 250 cubic yards a day with this system.

Lumber, pipe, and other materials used in construction of the Parker Pen Co. plant also were handled by the Prime-Movers, eliminating the necessity for cranes, hoists, and other material-handling equipment. Five Prime-Movers kept 60 bricklayers supplied with mortar, brick, tile, and other facing material.

The contractor found the Prime-Movers highly efficient for all these jobs, and was able to complete the plant speedily with the material-handling setup.

A Prime-Mover power buggy delivers masonry materials to bricklayers working on the second-floor level of the new Parker Pen Co. plant in Janesville, Wis. T. S. Willis Co. of Janesville, contractor on the job, used Prime-Movers and this ramp setup to deliver all building materials, including concrete.

FIRST CLASS
Permit No. 279
(Sec. 34.9 P.L.&R.)
New York, N. Y.

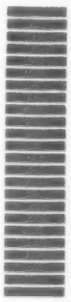
BUSINESS REPLY CARD
No Postage Stamp Necessary if Mailed in the United States

3c - POSTAGE WILL BE PAID BY

Contractors and Engineers

470 FOURTH AVENUE

NEW YORK 16, NEW YORK



FIRST CLASS
Permit No. 279
(Sec. 34.9 P.L.&R.)
New York, N. Y.

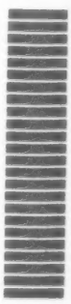
BUSINESS REPLY CARD
No Postage Stamp Necessary if Mailed in the United States

3c - POSTAGE WILL BE PAID BY

Contractors and Engineers

470 FOURTH AVENUE

NEW YORK 16, NEW YORK



Contractors and Engineers - Request Card - June '55

Please send me information on new products and/or catalogs described in the editorial columns of this issue, as circled below.

1	2	3	4	5	6	7	8	9	10	101	102	103	104	105	106	107	108	109	
11	12	13	14	15	16	17	18	19	20	111	112	113	114	115	116	117	118	119	
21	22	23	24	25	26	27	28	29	30	121	122	123	124	125	126	127	128	129	
31	32	33	34	35	36	37	38	39	40	131	132	133	134	135	136	137	138	139	
41	42	43	44	45	46	47	48	49	50	141	142	143	144	145	146	147	148	149	
51	52	53	54	55	56	57	58	59	60	151	152	153	154	155	156	157	158	159	
61	62	63	64	65	66	67	68	69	70	161	162	163	164	165	166	167	168	169	
71	72	73	74	75	76	77	78	79	80	171	172	173	174	175	176	177	178	179	
81	82	83	84	85	86	87	88	89	90	181	182	183	184	185	186	187	188	189	
91	92	93	94	95	96	97	98	99	100	191	192	193	194	195	196	197	198	199	

Name _____ Title _____
(Please Print)

*Company or Gov't Dept. _____

Address _____

City _____ Zone _____ State _____

*

Listing of your Business Connection is essential for handling literature reque

---

Contractors and Engineers - Request Card - June '55

Please send me further information on products shown in the Ad on

Page _____ Products _____ Adv. _____
(Advertisers Name)

Page _____ Products _____ Adv. _____

Page _____ Products _____ Adv. _____

Page _____ Products _____ Adv. _____

In addition I would like to receive information on the following:

Name _____ Title _____
(Please Print)

*Company or Gov't Dept. _____

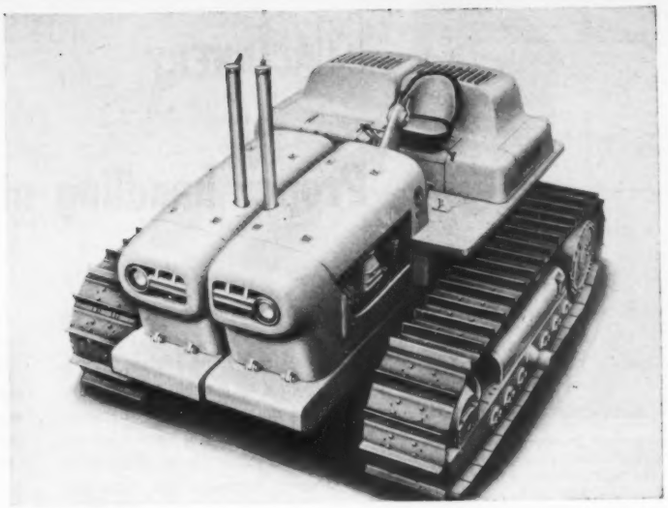
Address _____

City _____ Zone _____ State _____

*

Listing of your Business Connection is essential for handling literature requ

Euclid's big twin-engine crawler tractor has been placed in limited production



The 58,000-pound Euclid TC-12 crawler tractor is powered by two 194-hp diesel engines through twin Allison Torqmatic drives. With 69,750 pounds of drawbar pull, the huge machine offers exceptional work capacity in such jobs as push-loading scrapers and bulldozing.

■ The TC-12 Twin Power crawler tractor, introduced last fall by Euclid Division of General Motors Corp., Cleveland 17, Ohio, is now in limited production. This huge track-type model weighs 58,000 pounds bare, representing a new size class for crawler tractors. Its power source is two General Motors Series 6-71 194-hp diesel engines. Drawbar pull with bulldozer attachments is 69,750 pounds.

Each of the diesel power units drives one track through a separate Allison Torqmatic drive consisting of a torque converter and semiautomatic transmission. There is no master clutch, and changing from one speed range to another can be done under full power. This arrangement of the power train, it is emphasized, provides simple operation, a smooth steady flow of power, and greater drawbar pull at faster speed.

Three speed ranges forward and reverse, give speeds to 1.5 mph in low range, 3 mph in intermediate, and 8.3 mph in high.

With the Twin Power design, each half of the tractor is a separate unit joined to the other by a single big transverse shaft. Each half is free to move 7 inches up or down to maintain better contact and traction on rough ground. For shipping purposes, the tractor can be separated into two halves.

Steering is accomplished by putting either transmission in neutral and using the corresponding steering brake. Tight turns are made by reversing one transmission and keeping the other in forward speed.

Maintaining proper track tension is automatic on the TC-12. A hydraulic jack maintains uniform pressure on the front idler, and an accumulator absorbs recoil if a large stone or other object should lodge between the track and sprocket.

Track and carrier rollers, 7 on each side, have 1,000-hour lubrication. Barrel-type bearings have wide spacing and self-adjusting face-type seals. Heat-treated shaft and rollers are integral units for longer life and lower maintenance. There are 39 shoes on each track. Ground contact with 26-inch track shoes is 6,000 square inches.

Another unique design feature is the rear location of the two radiators so that there is no obstruction of air flow regardless of attachments.

Track gage of the TC-12 is 110 inches. Over-all width is 136 inches, and over-all length, 194 inches. The drawbar height is 23 inches, and ground clearance, 20 inches

For further information write to the company, or use the Request Card at page 18. Circle No. 52.

One Grease One Gun

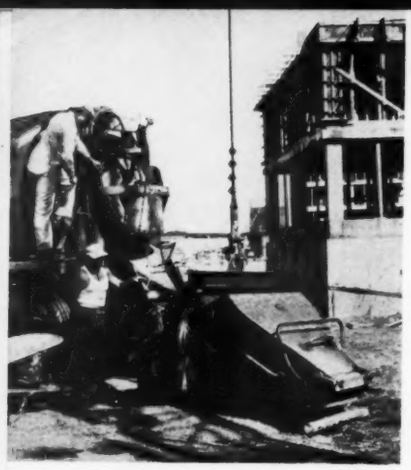
...that's all you need!

Simplify maintenance, and do a better job of it too! That's what you want, and that's what you accomplish when you switch to Sinclair LITHOLINE® Multi-Purpose Grease. This all-purpose lubricant enables you to cut service time to a minimum, and get lasting protection for all bearings and fittings. At all temperatures it's easy to use. Moreover, your grease jobs last longer because LITHOLINE resists water-washout, doesn't thin in summer heat, and won't oxidize and cake in bearing crevices.

What more could you ask than a proven "one grease – one gun" system of superior lubrication? There's less wear, no wasted time, and you save money. Call a local Sinclair Representative today for full information, or write for the new LITHOLINE pamphlet to Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. *There's no obligation.*

SINCLAIR LITHOLINE

Multi-Purpose Grease



The laydown-type bucket proves most useful in cases where concrete is transferred to the bucket from truck mixers or similar equipment with low clearances.

MACHINERY

Proper handling methods can lower concrete costs

The selection of equipment and methods for any concrete-placing operation plays a large part in the economy of a concrete job. The greatest savings can be achieved if both the machines used and the methods followed are well adapted to the type of concrete work being done. Contractors can be sure of effecting these savings if they first consider two factors—specifications and job conditions—which provide clues to the right selection of both equipment and techniques.

Under the heading of specifications will come such things as the number and sizes of aggregate and sand, the maximum size of aggregate, and the method of proportioning. A list of job conditions will provide information about such items as concrete plant requirements, the size of mixers, hauling distances, elevations and dimensions, and the maximum height of lift.

The experienced concrete superintendent, looking over a check list providing basic information about the project, can choose the batching method and placing equipment which will do the job most economically.

Concrete transportation

Once all available information about specifications and job conditions has been gathered, the contractor will be in the best position to consider various types of equipment and methods, together with their limitations and advantages, and select those which will do the job best. Equipment available for transporting concrete includes truck mixers, concrete buckets hauled by trucks or cars, agitating and nonagitating bodies on trucks, hopper cars, pneumatic-tire power-driven carts, hand-pushed concrete carts, wheelbarrows, concrete pumps and chutes, and conveyor belts. The use of chutes and conveyor belts is limited, however, when restrictions are placed on the consistency of the concrete.

On small jobs where the haul distance is short and the yardage is not great, wheelbarrows can be used. The maximum useful distance these units can cover is about 200 feet or less. The placing capacity of a wheelbarrow is small, averaging from 1 to 1½ cubic yards per hour.

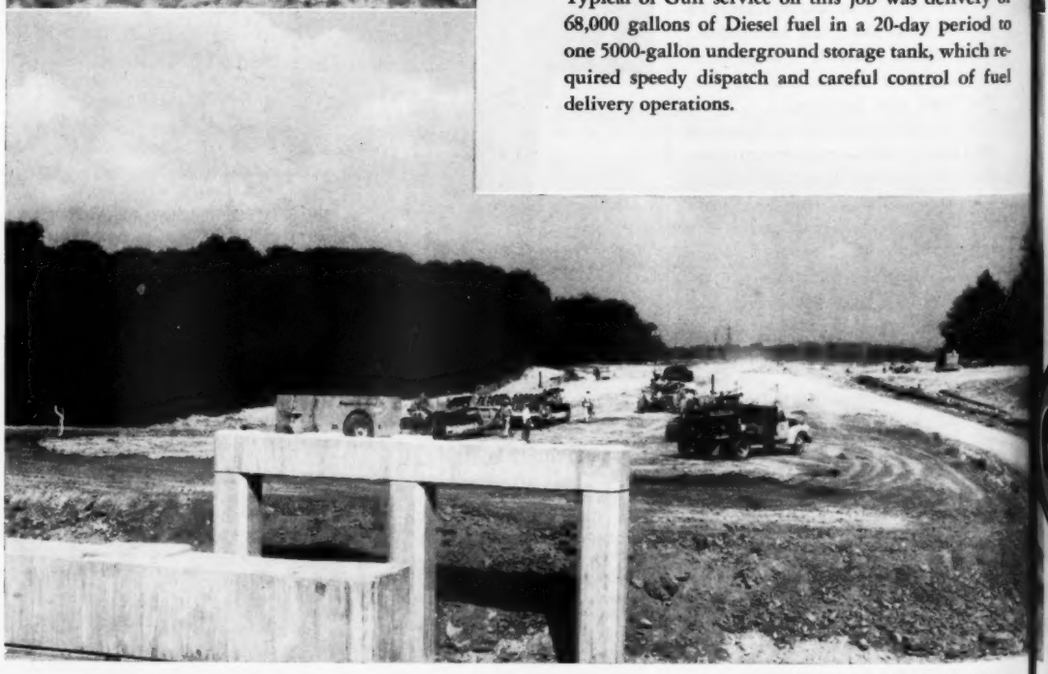
Rubber-tire hand-pushed carts carry from 6 to 8 cubic feet of concrete, and may be used for distances not exceeding 200 feet. Each cart will place 3 to 5 cubic yards of material per hour if runways are rigid and fairly level.

Many jobs now use 9 to 12-cubic-foot pneumatic-tire power carts. These machines provide economy, speed, flexibility, and higher capacity, and are less likely to cause back strain for crew members. These carts work to best advantage on rigidly constructed runways at least 5 feet wide, which allow concrete to be dumped sideways to the pour. Most economical in runs up to 1,000 feet, they average 15 to 20 cubic yards per hour on a 600-foot haul. On building-construction projects, they do away with the need for multiple towers.

Steel pipelines are of particular advantage in tunnels or similar places which are almost inaccessible. In this

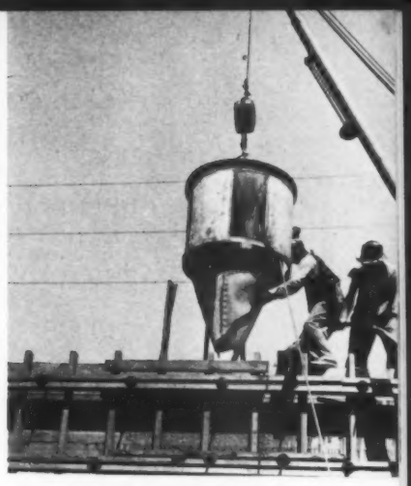
GULF PRODUCTS

Peter Kiewit Sons' Company and Condon-Cunningham Company have the contract for Sections C-20 and C-21 of the Ohio Turnpike, which comprises 6.2 miles between Strongsville and Olmsted Falls, Ohio. Work involves moving over 1,000,000 cubic yards of dirt, with extremely poor soil conditions. Typical of Gulf service on this job was delivery of 68,000 gallons of Diesel fuel in a 20-day period to one 5000-gallon underground storage tank, which required speedy dispatch and careful control of fuel delivery operations.



Job conditions and specifications prove a guide in selecting equipment for hauling and placing

by A. F. GARLINGHOUSE, president, Gar-Bro Mfg. Co., Los Angeles, Calif., with RAY DAY



An accordian-type trunk remains over wall forms no matter which way the round concrete bucket turns. This allows more concrete to be placed per shift.

case, the material is pumped through the line by a ruggedly built heavy-duty horizontal piston-type pump. The method also has advantages on bridge pours which delivery vehicles cannot reach without difficulty. The limiting factors with this method are the size of the pipe, the horizontal and vertical distances the material must be pumped, and the amount of friction in the line. Concrete with aggregate larger than 3 inches cannot be handled by this method. A line can handle 20 to 65 cubic yards of concrete per hour with no segregation.

Concrete buckets

The concrete bucket, properly selected and with the proper attachment, is the most useful piece of equipment for handling high-quality concrete. The first thing to consider is the selection of the proper type and size of bucket. It should be a center discharge unit with a self-closing gate to control the concrete properly. These buckets, which range from 1/3 to 12 cubic yards in size, can be selected after considering the size of the aggregate in the concrete, the consistency of the mix, and the capacity of the hoisting crane.

If the concrete has a normal slump of from 4 to 6 inches, with 3-inch-maximum aggregate, the so-called lightweight concrete bucket should be used. These buckets, which can be handled by light cranes, are available in sizes up to 1½ cubic yards. If the concrete has a low slump of from 2 to 4 inches, a heavier standard-duty bucket with steeper side slopes and a larger gate is preferable. Standard-duty buckets range up to 4 yards in size, have much bigger gates, and will handle stiff mixes having aggregates up to 3-inch maximum.

If the concrete is extremely dry and has large aggregates, use of a heavy-duty bucket is in order. These have extra-large specially designed gates which are either manually or air-controlled. They are built for handling dry or low-slump concrete with aggregates up to 6 inches in size. Available with either single or dual compartments, these big buckets come in sizes up to 12 cubic yards. They are used on large dams and other projects which require handling of mass concrete rapidly and at low unit cost.

A modification of the concrete bucket is the laydown or rollover-type bucket, used where clearance under a truck mixer or transport hopper is a problem. These are particularly useful in handling concrete hauled by dump trucks, horizontal-discharge truck mixers, or similar equipment.

Any one of these buckets may be used for all phases of concrete placing, provided the crane can reach all areas. When placing direct to forms or collection hoppers, either a rubber collection hopper attached to the bucket gate or a suspended steel sub-hopper with elephant trunk will limit the flow of concrete from the large gate opening. This will eliminate waste and prevent segregation. These attachments and the self-closing gate permit the universal use of the concrete bucket on all phases of a job. Many contractors use three concrete

and **FINE SERVICE**

keep equipment rolling

on the Ohio Turnpike Project

The Ohio Turnpike is another huge and important project where a large percentage of the participating contractors rely on Gulf to keep their equipment operating efficiently.

Contractors like Peter Kiewit Sons' Company and Condon-Cunningham Company, for example, appreciate the clean-burning, high-performance properties of Gulf gasoline and Diesel fuels—as well as Gulf's prompt delivery service.

Let us discuss with you how Gulf quality products and fine service can help on your next job. They are quickly available to you through more than 1400 conveniently located warehouses.

GULF OIL CORPORATION · GULF REFINING COMPANY
1822 Gulf Building Pittsburgh 30, Pennsylvania

GULF

THE FINEST PETROLEUM PRODUCTS FOR ALL YOUR NEEDS

A combination of methods is used on a building-construction job. A Lima Paymaster truck crane with Gar-Bro 1-yard bucket places beam concrete while workmen haul concrete from a transfer hopper to the slab in Gar-Bro buggies.

buckets per crane when the concrete is delivered by truck mixers, thus saving truck-mixer time and increasing the number of passes made by the crane.

Placement methods

Concrete should be placed as near its final position as possible. If a large quantity is dumped in one spot and allowed to run, or is worked long distances in the form, segregation always results. This occurs because the mortar tends to flow out ahead of the coarser aggregate. Such a layer also produces a sloping work plane. Concrete gives best results when it is placed in horizontal layers of uniform thickness and consolidated before the next layer is placed.

Concrete for high walls should be placed to a point about a foot below the top and allowed to settle for approximately one hour. The free drop of concrete should not exceed 5 or 6 feet if segregation is to be prevented. Succeeding layers should be poured before set occurs so that a cold joint is avoided. A stiffer mix may be used in the upper section, since the concrete can be puddled or vibrated more easily. The form should be overfilled slightly so that excess material may be screeded off after the concrete has partially stiffened.

Collection hoppers with rectangular discharge openings should be used for work on narrow walls with closely spaced reinforcing steel. These hoppers are attached to single lengths of rubber elephant-trunk drop chutes. Collection hoppers with round discharge openings are more suitable for placing concrete in wider walls. These can be used with flexible-type steel drop chutes, and the sections can be unhooked as the form is filled.

The use of collection hoppers often saves money and helps to eliminate segregation. These hoppers are available with one side open for use with wheelbarrows, push carts, and power carts. Those with four sides may be charged by buckets. Other types, having extra-steep slopes and big openings, are most effectively used in handling stiff concrete.

Slab concrete is best handled by making the first placement at the far end of the work, and then dumping succeeding batches against the material just put down. The concrete should never be dumped in separate piles, then leveled and worked into a preceding section.

Present-day specifications almost always require handling and placing methods which will eliminate any segregation in the mix while it is being handled. This requirement need not be difficult for field crews to meet, since most segregation can be prevented quite easily if vertical control and discharge of concrete is used in placement. THE END

Archibald is appointed Joy district sales manager

Donald L. Archibald has recently taken the post of district sales manager for the Joy Mfg. Co., Pittsburgh, Pa., in the New England area. He is making his headquarters in Boston.

With Joy since 1940, Mr. Archibald served as sales engineer for the company before leaving for service with the U. S. Navy in 1942. He became sales engineer in the El Paso territory in 1945, later served as manager of the Mexico City office, and was working from the St. Louis office until his present appointment.

only these 2 completely different
PAYLOADER® TRACTOR-SHOVELS
offer you all these features...

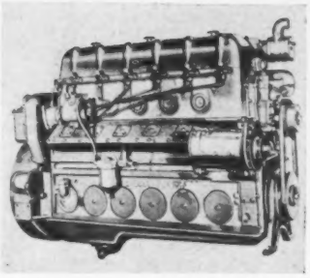
Simplified fuel system makes diesel engines more economical to run and easier to service

■ An entirely new fuel system designed around the Roosa-Master pump is now standard equipment on all diesel engines being produced by Harnischfeger Corp., Crystal Lake, Ill. The pump was developed in cooperation with Hartford Machine Screw Co., of Hartford, Conn.

Much simpler than the former system, the new fuel system does away with a total of 131 separate parts and is 49.5 pounds lighter. Furthermore, it is far easier to understand and requires considerably less maintenance than former systems.

The Roosa-Master pump, using no external cams or valves, eliminates the separate pumps for each cylinder and the individual adjustments ordinarily required to time and balance the load of each cylinder. Also eliminated is a complex system of links, gears, racks, and cams. There is only one adjustment in the new system, and this is set for the individual application of the engine.

A further advantage of the simplified fuel-injection system is easier starting. Injection is automatically retarded until engine speed reaches 500 rpm, and is then gradually advanced, matching the increased operating speeds. P&H states that this results in extremely fine idling characteristics as well as over-all smoother operation and improved engine torque.



P&H diesel engines are now equipped with a new simplified fuel system designed around the Roosa-Master pump.

Because fuel calibration is inherent in the pump's design, P&H diesels now offer greater fuel economy. Harnischfeger emphasizes that it is impossible to exceed the maximum fuel quantity needed. In addition, sharp injection cutoff prevents dribbling of fuel so that there is no excessive carbon build-up on injector tips. This means absence of clogging and smoke.

A single-cylinder opposed-plunger inlet-metering distributor-type unit, the pump is sealed and self-contained. It incorporates a built-in vane-type fuel-transfer pump, governor, injection rotor with plungers and metering valve, and distributor head.

For further information write to the company, or use the Request Card at page 18. Circle No. 90.

Maintenance manual for unpaved roads

■ A small manual describes the use of calcium chloride for the maintenance of unpaved roads and illustrates a number of typical maintenance operations.

The information, designed to develop specific maintenance procedures for unpaved roads, is the result of many years of field experience and laboratory research.

The Calcium Chloride Institute, which compiled the manual, claims the proper use of calcium chloride will save about 75 per cent of aggregate replacement and blading costs. In addition, it will give a dust-free smooth-riding surface all year round.

To obtain this literature write to Calcium Chloride Institute, 909 Ring Bldg., Washington 6, D. C., or use the Request Card at page 18. Circle No. 55.

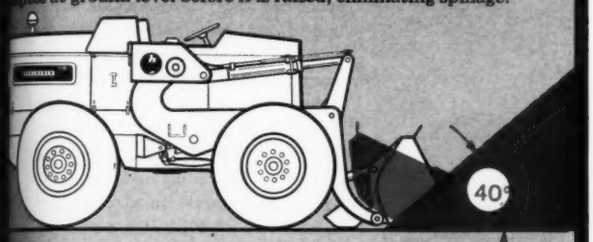
Cement consultant for Dewey & Almy

Daniel W. Yike has been made a consultant for the Dewey & Almy Chemical Co., Cambridge, Mass., a division of W. R. Grace & Co. At the same time, he was appointed a sales engineer for J-W Materials, Inc., Napoleon, Ohio, a D&A distributor.

Mr. Yike will handle the company's water repellents, concrete bonding and air-entraining agents in Florida, Mississippi, Tennessee, and Kentucky, and will serve as a Dewey & Almy consultant in Mississippi,, Alabama, Georgia, South Carolina, and Tennessee.

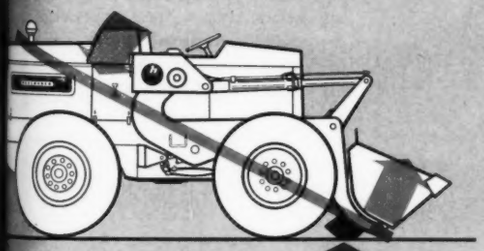
0 DEGREES BREAKOUT T GROUND LEVEL

can get HEAPED BUCKET LOADS and you get them STER and EASIER WITH THIS NEW BUCKET TION. Most important of all—you KEEP BIGGER YLOADS—because the bucket can be tipped back a full egree at ground level before it is raised, eliminating spillage.



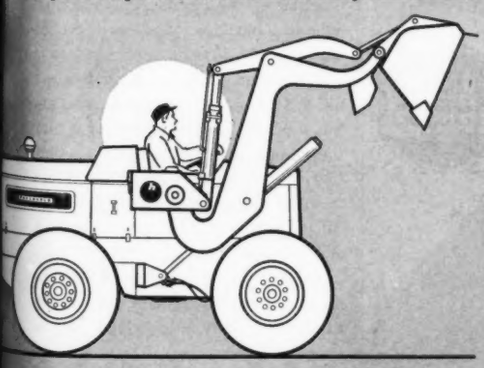
OWERFUL PRY-OUT ACTION

endous pry-out force is obtained by using the out pads on the ground as a fulcrum for leverage. The forces opposing the pry-out action are thus transferred ground through the pads instead of to the axle, and hydraulic system of the machine.



AFETY AND STABILITY

erslung boom-arm design keeps moving members out of ator's reach at all positions—without using safety ds and screens. Longer wheel base and close, low, -carry position provide maximum stability and balance.



HOUGH-DESIGN
HOUGH-QUALITY
HOUGH-PERFORMANCE

more horsepower per bucket capacity than any other wheel tractor-shovel. Either gasoline or diesel power available.

easy to operate Fullest operator visibility for safe, fast maneuvering; power-steering; minimum number of control levers. Foam-rubber molded seat and back cushions. Seat adjustable for operator comfort. Longer wheelbase and better balance add to riding comfort.

accessibility Unusual accessibility for servicing and maintenance. Battery and oil reservoir are located under an easy-access cover just behind driver's seat. Sealed grease fittings. Exterior hydraulic line outlet provided for easy addition of hydraulically-operated accessories.

torque-converter drive in conjunction with 4-speed, full-reversing transmission provides precise, easy control and the widest possible range of speeds for both forward and reverse. Acts as a shock-absorber for the entire power train.

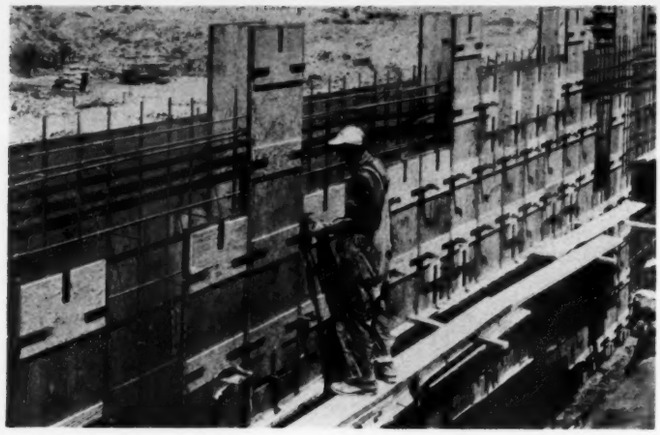
other features Closed, pressurized hydraulic system to keep dirt and air out of oil; powerful hydraulic brakes; double-acting hydraulic cylinders and chrome-plated piston rods; 12-volt electric systems on gas-powered models; forward and backup driving lights; tail lights.

THE FRANK G. HOUGH CO.

Send me full information on the new model HH and HU "PAYLOADER" tractor-shovels
☐ Model HU–1 cu. yd. ☐ Model HH–1½ cu. yd.

Name.....
Title.....
Company.....
Street.....
City.....
State.....

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. • LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY



The new Superior All-Ply panel forms, designed without frames, are reported to be easier to erect, dismantle, and transport than conventional metal or wood-edged forms. One working part aligns and locks forms, receives the tie rod, and holds the liner.

Light frameless plywood panel forms go up fast, cut transport costs

■ Plywood panel forms without metal or wooden frames have been placed on the market by Superior Concrete Accessories, Inc., 4110 Wrightwood Ave., Chicago 39, Ill.

Made of 1⅛-inch plywood and reinforced with sections of ½-inch plywood backing, the All-Ply forms weigh less than 5 pounds per square foot. With an over-all thickness of only 1⅞ inches, including straps, the All-Ply forms are economical to transport. The manufacturer estimates that a truck can carry twice the number of All-Plys as compared to conventional panels with 2×4 frames.

The frameless panels come assembled and ready for use. A single combination clamp—the only working part required—draws the panels together tightly and locks them, secures the snap tie, lines up panel faces, and provides a wedge for liners when necessary. Although liners are generally required on only one side, and then not on every row of clamps on the lined side, the combination clamp has an integral liner wedge for securing and drawing up the liners.

The All-Ply panel forms use Superior 3M snap ties which are rated for a safe working load of 3,000 pounds or a maximum of 4,500 pounds. When greater strength is required, Superior 5M ties should be used. No spreader washers are required because, with the head of the tie in the wedge of the combinaiton clamp, the tie acts both as a tie and a spreader. The snap ties are furnished for ¼, ½, and ¾, and 1-inch break back.

With average care and oiling between uses, All-Ply panel forms are reported to last through a great number of re-uses. Citing field reports, the manufacturer states that the panels have been used for up to 100 pours.

Offered in standard 2×4, 2×6, and 2×8-foot sizes, the panels can be erected horizontally or vertically in any combination of heights. Special corner angles are available for forming inside or outside corners. Fillers are constructed in the same manner as the All-Ply panels.

For further information write to the company, or use the Request Card at page 18. Circle No. 117.

Adjustable shoring made with simple metal parts

■ Details on an economical shoring method that uses Elis metal parts are given in literature available on request. The shoring technique eliminates the measuring, cutting, splicing, blocking, and wedging of conventional shoring methods.

The method illustrated involves the use of two pre-cut dressed 4×4's. One has a pair of clamps nailed to it and the other is slipped into these clamps. One man then lifts the upper shore member into position under the purlin, where it is held securely by a slip-in shore holder.

The Elis system also includes a simple jack, used for adjustment and for lifting the shore under load, and a shorehead clamp.

To obtain this literature write to Elis Equipment Co., Inc., 211 N. W. Fourth St., Oklahoma City, Okla., or use the Request Card at page 18. Circle No. 83.

Any Truck Can PULL More Than It Can Carry

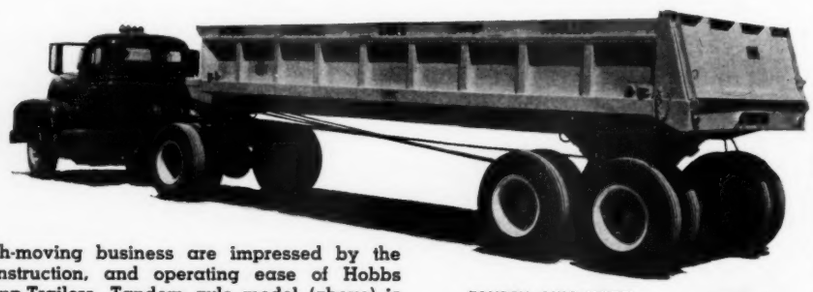
The use of a trailer to increase the hauling capacity of a truck is as simple as child's play. This principle enables your truck to PULL much more load than it could ever carry. Because of this . . .

HOBBS *Schonrock Cable Dump* TRAILERS CAN TRIPLE YOUR TRUCK EFFICIENCY

A truck equipped with Hobbs Schonrock Cable Dump Trailer hauls three to four times as much dirt, sand, gravel or aggregate as one equipped with a dump body. The yard-mile SAVING is made even greater because the Hobbs Schonrock Cable Dump Trailer does away with heavy, expensive and intricate hydraulic lifting equipment. The simple, time-tested method of increasing power by means of block and tackle makes Hobbs Schonrock Cable Dump Trailer high in efficiency, low in cost, simple in maintenance.

- REDUCES MAINTENANCE AND FUEL COSTS
- PUSHES ITSELF OUT OF MUD
- DUMPS EASILY AT ANY ANGLE
- GREATER GROUND STABILITY
- AUTOMATIC TAIL GATE
- EASIER TO MANEUVER
- INCREASES YOUR PROFITS

Permits full Advantage of Your State Bridge Formula Laws



TANDEM AXLE MODEL

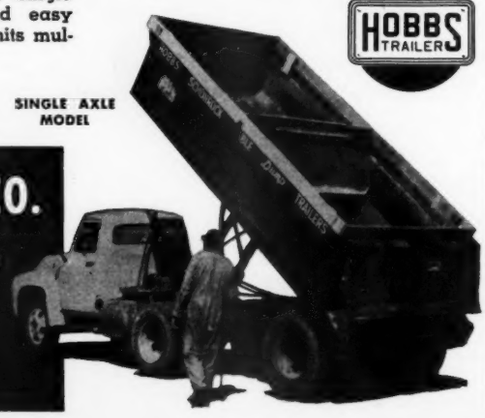
Men in the earth-moving business are impressed by the capacity, rugged construction, and operating ease of Hobbs Schonrock Cable Dump Trailers. Tandem axle model (above) is designed for legally hauling full gross load capacities. Single axle model (below right) provides fast delivery and easy maneuvering in close quarter operation. Batch gate permits multiple dumps.

HOBBS TRAILERS

Distributorships Available

WRITE, WIRE OR PHONE COLLECT

SINGLE AXLE MODEL



HOBBS MANUFACTURING CO.

609 North Main St. Fort Worth, Texas

Sales and Service also in Houston, San Antonio, Lubbock, Dallas, El Paso, Oklahoma City, Wichita, Kansas and Lincoln, Nebraska.

A McGraw Co. surveyor uses a Berger theodolite to establish a highly accurate horizontal grid system on the AEC gaseous diffusion plant project at Paducah, Ky. These instruments enabled the contractor to meet exceedingly close tolerances on the project.

Case history

Surveying units permit close-tolerance work on AEC plant project

Close tolerances on many installations were an important feature of construction specifications at the Atomic Energy Commission gaseous diffusion plant project at Paducah, Ky. The project called for accurate survey work if the contractor, F. H. McGraw & Co., Hartford, Conn., was to meet specifications.

Using Berger theodolites and dumpy levels, McGraw achieved "excellent results" on the job. The theodolites enabled the contractor to establish a horizontal grid system of a very high accuracy for the entire project, and to lay out the main control axis lines of negative expansion on the large process buildings within a tolerance of .000 to .016 inch.

Berger 18-inch precise dumpy levels were used to set all equipment in the process buildings and establish grade pin elevations within a tolerance of .005.

Repair of worn threads by insert method

■ Literature describing a new thread-repair kit, which contains wire thread inserts, a tap, and an inserting tool, is available from Heli-Coil Corp., Danbury, Conn.

The bulletin illustrates a three-step procedure for making permanent thread repairs in steel, cast iron, aluminum, magnesium, copper, plastics, or wood. It also lists the insert sizes and tools available in the kit, the number of inserts in each parcel, and the price.

The equipment contained in the kit is designed for the repair of 6-32 to 1½-6 threads. Typical applications listed for the inserts are their use on engines, vehicles, and buildings.

To obtain Bulletin 724 write to the company, or use the Request Card at page 18. Circle No. 79.

Asphaltic-concrete mix can be laid cold

■ A bituminous paving mixture that is laid cold to form a smooth tough pavement is described in a folder from Birmingham Slag Co., 2019 Sixth Ave. N., Birmingham, Ala. The mixture offers an economical way to handle small projects that do not justify the use of complete asphalt-mixing and paving plants.

The asphaltic-concrete paving material, known as Enslag Colmix, can be shipped in open-top cars or trucks for long distances and is easily unloaded. Illustrations of typical applications of the mix show its use in new construction; resurfacing; and patching work on driveways, streets, and bridges.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 70.

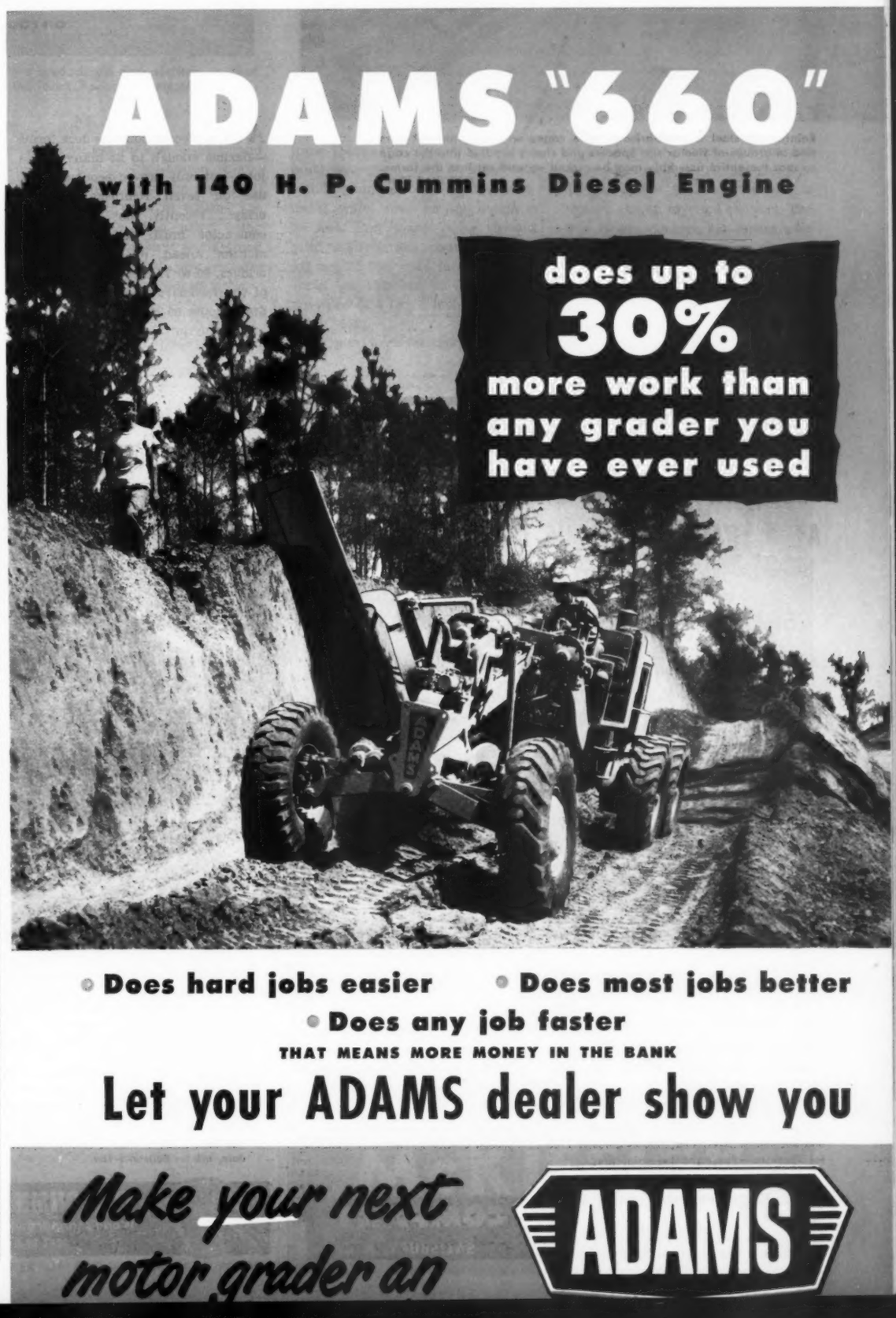
Hand-carried 2-way radio

■ The hand-carried Pak-Fone portable two-way radio is described in a folder from Industrial Radio Corp., 428 N. Parkside Ave., Chicago 44, Ill.

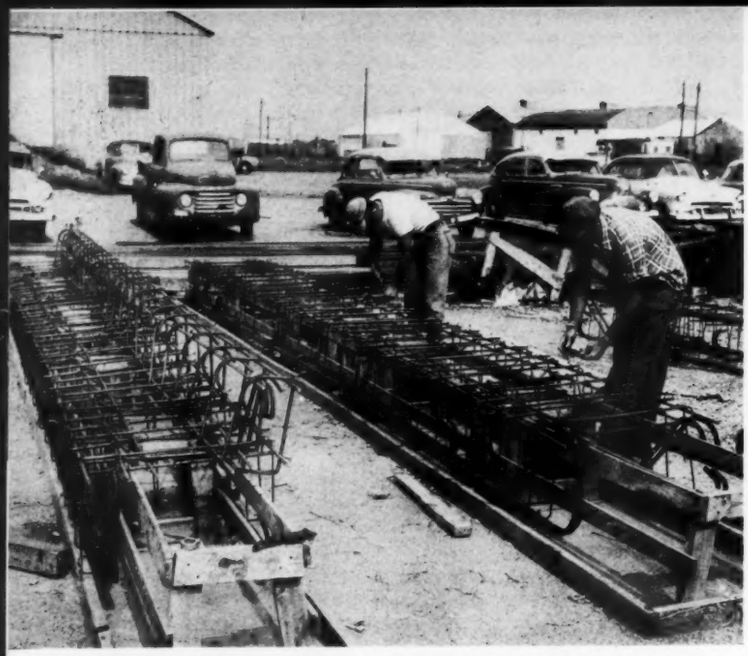
Powered by self-contained batteries, the Pak-Fone offers easy and flexible operation. The user presses the button on the microphone to talk and releases the button to listen. Static-free FM permits clear loudspeaker reception from other Pak-Fones or from any fixed or mobile stations on the same frequency channel.

The two basic Pak-Fones are the Type PS40 for the 25 to 50-mc band, and the PS150 for the 145 to 174-mc band. Both types are available in a variety of models described in the bulletin.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 74.



A $5 or $10 food package sent to a Korean orphan will make you feel good, too. Send contributions to CARE, 600 First Ave., New York, N. Y.



Reinforcing steel is prefabricated into cages with longitudinal bars tied in groups of five or six. Spacers and chairs are tied into the cage so that the entire assembly may be picked up and set into the forms.
C&E Staff Photo

MACHINERY

Two months cut from schedule with precast bridge decks

Concrete-products plant, easily modified forms, prove economical on road reconstruction contract

A set of precast-concrete deck forms —flexible enough to fit many bridge jobs—not only proved economical in use on seven Nebraska highway bridges recently, but helped the contractor finish construction two months ahead of schedule. The bridges, 60 to 71 feet long, were part of the reconstruction of 12 miles of State Route 89 east of Wilsonville.

Economy in this type of precasting work—depending largely on making many items identical—was achieved through standardizing of spans, roadway width, cross section, and skews. Adapting the forms to the space, equipment, and manpower available in an existing concrete-products plant, the contractor assured a low-cost production of the units.

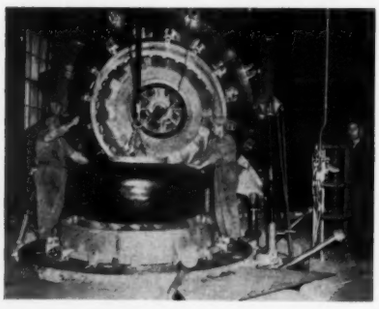
Since the maximum weight of individual pieces was within the lifting

CUT TIRE COSTS

GET NEW TRACTION ON YOUR WORN TIRES AT A FRACTION OF THE COST OF NEW ONES

from CAROLINA TIRE CO.

SPECIALISTS IN EARTHMOVER TIRE RECAPPING, TREADING AND REPAIR



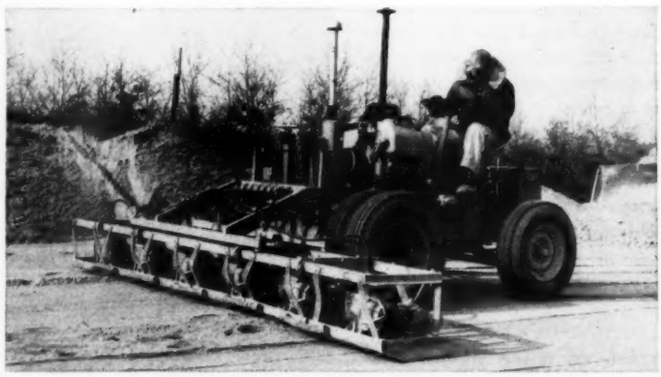
HIGH QUALITY WORK assured by factory-trained men who process your earthmover tires on modern Lodi equipment. Finished tires go back into service with deep, rugged tread that can be depended upon to give service equal to and often better than the original tread.

GUARANTEE goes with every tire tread and repair, which is warranted to be free from defects in workmanship and material.

FAST DEPENDABLE SERVICE is provided through a large fleet of trucks fully equipped to handle earthmover tires. Experienced operators give you on-the-job service, pick-up, and delivery, anywhere, around the clock. Tires shipped throughout the country.

You can get Goodyear Sure Grip, Hard Rock Lug or Hard Rock Rib designs on a variety of Grader and Earthmover sizes from 1100-24 through 2700-33. "Special Service" treads also available for Truck and Pneumatic Industrial tires.

CAROLINA TIRE COMPANY
232 N. MAIN ST. SALISBURY, N. C.



WISCONSIN-POWERED

Jackson Multiple Compactor *Achieves 98% Sand Compaction* on Garden State Parkway Project

When the Reid Contracting Co., of Woodbridge, N. J., was awarded the contract comprising grading and drainage from Route 9 interchange, north of Toms River to the S. Matedeconk River (Garden State Parkway, Sec. 8), one of the essential pieces of equipment required for the job was the Wisconsin-Powered Jackson Multiple Compactor, illustrated above.

The picture shows the vibrator compacting the sand fill enclosed by the abutment and wing walls of the bridge that will carry the Parkway over the Indian Head Road. Specifications called for laying down the sand in 12" layers, with 98% compaction in the top 4' of depth and 90% below. Tests by supervising engineers show that these requirements were met.

This is a typical assignment which, among other things, demonstrates the complete adaptability and heavy-duty serviceability of Wisconsin Heavy-Duty Air-Cooled Engines to Fit the Machine and the Job. These engines are used as standard power components on a great variety of construction machinery requiring power in a 3 to 36 hp. range . . . 4-cycle single cylinder, 2- and 4-cylinder models.

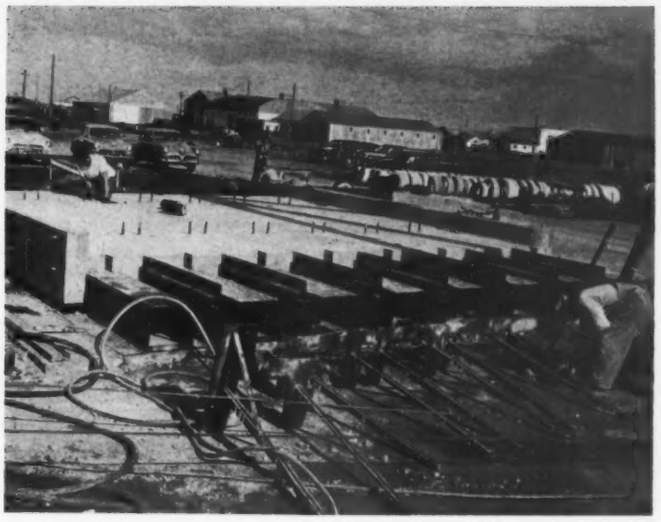
You can't do better than to specify "Wisconsin Power" for your equipment. For detailed data, ask for Bulletin S-164.

MOST H.P. HOURS

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

A 8317-I½

A stiffleg derrick and CMC Wonder mixer are used to cast deck sections. As the derrick swings a Gar-Bro 1-yard bucket to the forms, concrete is consolidated by a workman with a Dart electric vibrator.



The outer sides and end bulkhead of the forms are stripped by hand. Since there are no diaphragms at the end of sections, bulkheads can be slid to any position on the forms to make sections of any length. *C&E Staff Photo*

capacity of small cranes, no special equipment was needed to transport or erect the units. Precast deck sections were taken from the stockpile to bridge site by trailer trucks when needed, and a Northwest 25 crane picked sections off the trailers and swung them onto the piers in a single lift. After a few simple operations, the bridge was ready.

Bids on this job were taken on alternate designs for cast-in-place and precast decks. Christensen Corp., Fremont, Nebr., was the successful bidder on the basis of casting the decks in place. But after being awarded the contract, it was granted permission to substitute precast decks at no change in the contract price.

Adaptable to many spans

Though the seven bridges each had three spans, the same deck sections could have been used on structures with any number of spans. The maximum center span for the design is 28 feet. End spans range upward from 16.5 feet. The roadways on this job are 22 feet wide face-to-face of curbs, but this can be increased in multiples of 3 feet 1 inch to any desired width.

A typical deck for this job consists of two exterior or curb sections and six interior sections. The interior section is 3 feet 1 inch wide and is shaped like an inverted channel. The legs of the channel, 9½ inches wide at the top, taper 1¾ inches per foot on both sides. The depth of the legs below the slab ranges from 10 inches for the 16.5-foot span to 15 inches for the 28-foot span. Slabs are uniformly 6 inches deep. Curb sections

A new ABRASOWELD by LINCOLN

Higher alloy content delivers greater resistance to both impact and abrasion... for less cost!

Cuts hardsurfacing costs *on equipment like this dragline bucket. Teeth, lip, bottom and side plates are built up with long wearing Abrasoweld.*

★ **Operates in *all* positions**
★ **Spatter is less**
★ **Beads are smooth...easy to clean**
★ **Can be used with *any* AC or DC welder**

Saves Inventory. Why stock so many different hardsurfacing rods? Two Lincoln rods . . . new Abrasoweld and Faceweld handle almost all your hardsurfacing needs. And Lincoln delivers *more wear per dollar* to cut your hardsurfacing costs.

Specifications and procedures on new Abrasoweld and Faceweld are in Lincoln Weldirectory on Hardsurfacing. Write for Bulletin 466.

THE LINCOLN ELECTRIC COMPANY
Dept. 5303 • Cleveland 17, Ohio
THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

Above is a 10-sheave block, 500-ton capacity, 30" roller bearing sheaves, further proof that —

McKISSICK BUILDS A BETTER BLOCK FOR EVERY PURPOSE

McKISSICK BLOCKS

Give You The Lift You Need

Blocks especially designed to solve your lifting problems.

1 to 10 sheaves GUARANTEED to carry rated loads from 5 to 500 TONS!

Equipped with Johns-Manville klipper grease seals.

McKISSICK

McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma

are generally similar, but are 2 inches narrower and have an integral curb 10 inches high and 12 inches wide.

Diaphragms between the legs of the channels are spaced at 5.75-foot centers, but there are no diaphragms at the ends of the sections. This feature made it possible to increase or decrease the length of sections any desired amount without altering the basic form. It also made it convenient to build sections with skewed ends.

Pipe sleeves cast into the legs provide a space for the 1-inch bolts which tie the legs of adjacent sections together after they are erected. A keyway the full length of each side of each section is filled with grout after the bridge is assembled. This provides a shear key between the sections to assure their functioning as a unit under loads. An important feature of the design is a 4 × 6-inch vertical notch at the center of each end of each deck section. After the sections are in place on the bridge, the end diaphragms are poured through these openings.

Bolts for handling and for handrail posts are cast into the exterior sections. The handling bolts are removed when the section has been set in place on the bridge and the holes grouted.

Casting yard at pipe plant

All deck sections for the seven bridges, together with some reinforced-concrete sheet piling, were manufactured by Wilson Concrete Co. Inc., in its plant at Grand Island, Nebr. This plant normally produces reinforced-concrete pipe and had most of the equipment necessary to produce the deck sections.

For a casting bed, Wilson cast a concrete slab large enough to accommodate a 24 × 28-foot bay—the longest span built under the contract. This platform was located so that it could be reached by a stiffleg derrick used in casting concrete pipe. Pans of ⅛-inch steel were shaped to form the under side of the channel sections. Divider plates between the sections and form bottoms were fabricated of 3/16-inch steel. Each set of pans and dividers was separate. On the casting bed, the sections were tied together with threaded rods extending through the eight sections making up a bay.

Span length and depth of channel legs are the only two variables in the dimensions of the sections. The length of the sections is determined by the location of steel bulkheads which slide into the assembled form. Setting these bulkheads at any desired point makes it possible to pour sections of any length up to the maximum 28-foot length of the forms. For skewed ends, the normal bulkheads are replaced by a special set of bulkheads built to the desired skew. Cooperation from the design office, which standardized on a few common angles of skew, made it economical for the plant to build the special bulkheads.

The steel forms are designed for the maximum depth of channel leg, which is 15 inches below the bottom of the slab. For shorter spans where this depth is less, wood fillers were laid in the bottom of the channel form to take up the difference in depth.

Reinforcing prefabricated

Reinforcing bars were assembled into cages in an area adjacent to the casting yard. Here, wooden templates were set up to assure the proper alignment and spacing of the bars. Chairs and spacers were tied to the bars on the template so that the entire assembly was ready to be set in place in the forms. An innovation in reinforcing was the grouping of the principal longitudinal bars. Instead of being spaced to permit the concrete to pass between them, these bars were tied in groups of five or six. The groups were held together with ties consisting of six turns of No. 12 wire with the ends twisted. This clustering of the bars made it simpler to work the concrete into the narrow and heavily-reinforced legs of the channel sections.

When the forms had been assembled and oiled and the reinforcing cages set in place, pouring was started. Concrete, mixed in an electrically powered CMC 11-S Wonder mixer, contained 6½ sacks of cement per cubic yard. Aggregates consisted of 1/3 crushed limestone graded from 1-inch down and 2/3 natural sand and gravel graded from ¾-inch down. Protex air-entraining agent was added to obtain approximately 3 per cent air in the mix. In cold weather 1 per cent of calcium chloride was added.

The concrete discharged from the mixer to a Gar-Bro 1-yard concrete bucket handled by the derrick. As concrete was placed, it was vibrated by a Dart electric vibrator. The top surface, which became the riding surface of the bridge, was given a wood float finish. The concrete was normally cured with burlap and water for about three days before the forms were removed. And curing continued for a total of seven days after the sections were removed from the forms and placed in storage. In cold weather the concrete was covered and heated with live steam.

Handling sections

When the concrete had attained sufficient strength to be handled, the forms were stripped. End bulkheads and exterior side forms were first re-

FAST PRODUCTION TEAM *for off-road hauling*

You get high-speed production on both excavating and hauling, when you team Koehring fast-shuttling Dumptors with Koehring heavy-duty shovels. Notice on the operation shown here how Dumptor spots in close under the Koehring ¾-yard 304 — keeps shovel swing short. Square body opening provides a big, easy-loading target — can be loaded over either end or side.

Shuttling back and forth between the shovel and the dump area, Dumptor travels round trip without turning. Constant-mesh transmission gives the same travel speeds in either direction — saves at least 2 slow turns on every haul cycle. This heavy-duty 6-yard hauler has better than 6 h. p. per ton of loaded weight — accelerates fast, pulls through soft ground and up grades with less shifting, climbs 24% grades fully loaded. One-second gravity dumping also saves time on every cycle. There's no 15 to 25-second wait for slow-acting hydraulic or electric body hoists — no expensive body hoist maintenance. What's more, gravity-dump never balks, never wears out.

Now, take a quick look at the other half of this heavy-duty team — the Koehring ¾-yard shovel. Its powerful digging crowd and fast swing are backed up by plenty of weight-stability to hold solidly to the grade. Automatic take-up and release of tension on the crowd chain assure maximum dig-in power at every boom angle. For all its powerful application, Koehring 304 booster clutch requires only ⅓ to ½ the lever pull of a straight manual clutch — yet retains accurate "feel" of load. Instantaneous dipper

moved by hand. A Gerlinger carrier with a capacity of 8 tons picked up the curb section, using an I-beam strongback with cables down to the lifting bolts. The pans and bottom form frequently stuck to the concrete, but they were quickly removed with the aid of a small hydraulic jack which operated through a hole in the pan to apply pressure between a form strut and the concrete section. The lift truck then carried the section to a nearby store-yard to await shipment to the job.

When the lift truck returned, it picked up the bottom form and pans for this section and removed them to temporary storage, leaving the space clear for the carrier to get to the next section. Each section was thus removed and stacked in the store-yard in reverse order. While the sections were being removed from the casting bed, workmen cleaned and oiled the forms so they could be replaced immediately. It was possible to strip one set of sections, replace the forms, and pour another set in one day.

Handling bolts cast into each section were removed easily after the bridge deck was erected. A 1-inch threaded rod projected about four inches above the finished surface of the concrete, and the 6-inch portion of the rod embedded in the concrete slab tapered from 1 inch in diameter at the top to 1¼ inches at the bottom. A 4-inch-square plate of 3/16-inch steel was welded to the bottom of the rod. These rods were set up on the form before concrete was placed. The threaded ends, carefully wrapped with Scotch brand masking tape, were kept from being covered with concrete. After the tape was peeled off during stripping, lifting clamps were attached to the rods with standard nuts.

Equipped with an I-beam strongback and cables running to lifting bolts, a Gerlinger carrier of 8-ton capacity picks up a 4-ton curb section from the forms to bring it to the storage area.
C&E Staff Photo

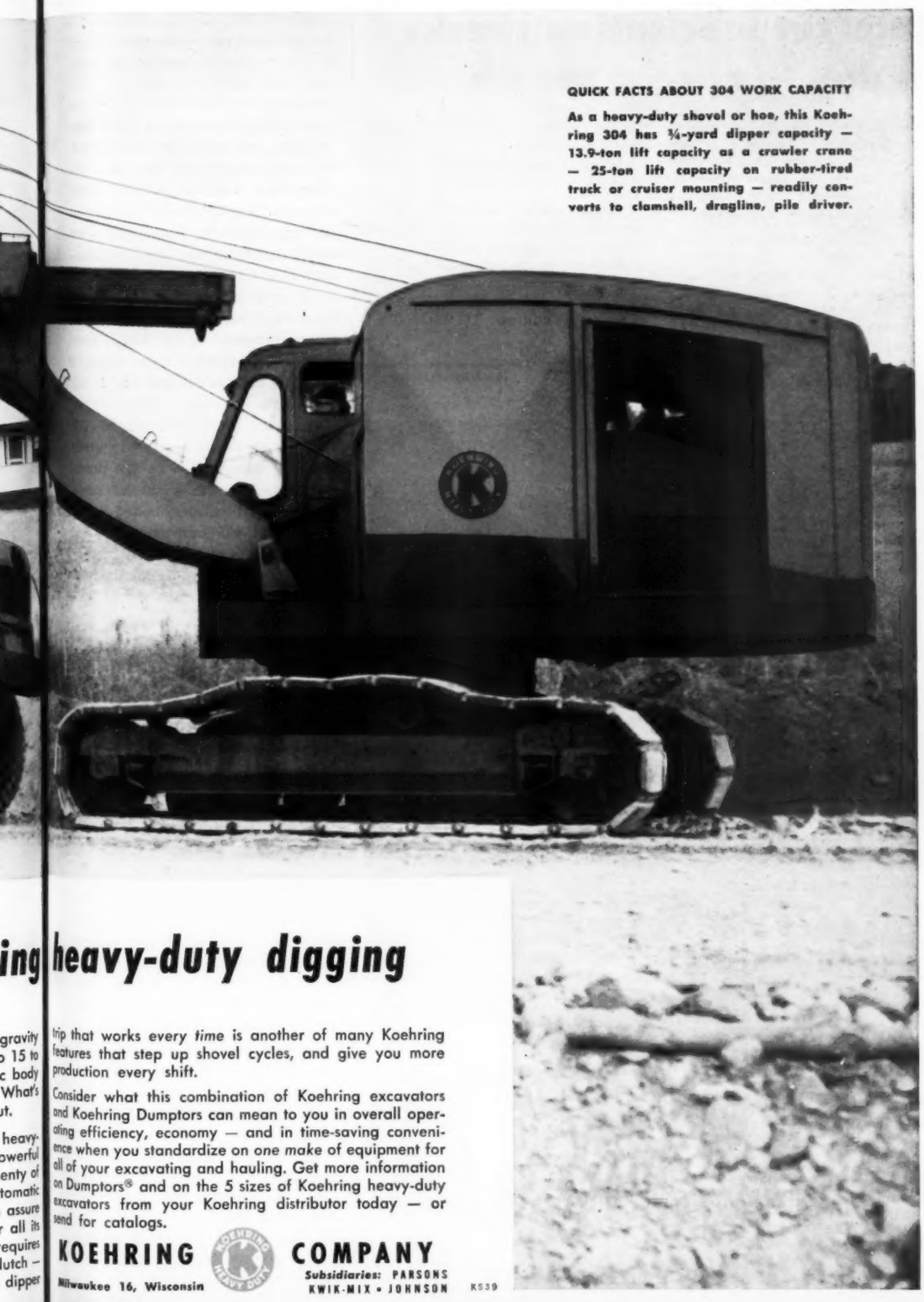
The embedded portion of the rod was coated with form oil before the concrete was poured. Later, when the section had been set in position in the bridge deck, the handling bolts were removed from the slab and saved for re-use. Once the bolts were removed, the holes had to be grouted.

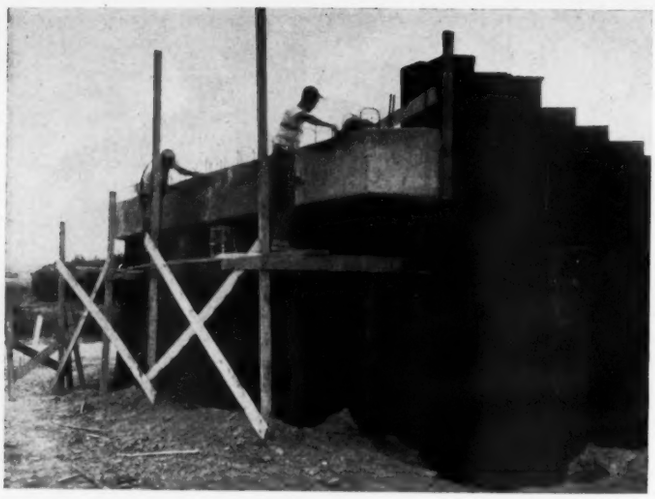
Each section was dated as it was cast. The number 54—which indicates 1954—was welded to the inside of the steel forms and bronze house numbers indicating the date and month were glued to the pans. This permitted a check on the curing period, insured that the concrete has had time to attain full strength before opening a bridge, and furnished a permanent record of the age of the structure.

Substructures of treated piles

While the deck sections were being cast at Grand Island, Christensen's crews were busy at Wilsonville building the substructures. The first operation was the construction of temporary detours and the removal of several existing bridges. Using a shop-made boom attached to a Caterpillar D7 tractor, crews picked off the old concrete decks and laid them aside. Sections too large to be lifted in one piece were split into smaller sections by dynamite. This was done by drilling holes along the line of the desired break with a Thor No. 23 jackhammer and loading them with light charges. Old timber pilings in the substructures were pulled by the same rig.

Excavations for piers and abutments were made by the Northwest 25 crane with an Omaha ⅝-yard dragline bucket and the D7 tractor-dozer. Each of the bridges has two piers and two abutments. Piers consist of a row of from five to ten treated timber piles, ranging from 34 to 50 feet in length, capped with a 2 × 2-foot concrete cap. The piling was driven by a Northwest crane handling shop-made leads and a 3,000-pound drop hammer. Forms for the concrete cap were supported on the piles. Concrete was mixed in


QUICK FACTS ABOUT 304 WORK CAPACITY
As a heavy-duty shovel or hoe, this Koehring 304 has ¾-yard dipper capacity — 13.9-ton lift capacity as a crawler crane — 25-ton lift capacity on rubber-tired truck or cruiser mounting — readily converts to clamshell, dragline, pile driver.
ing heavy-duty digging
trip that works every time is another of many Koehring features that step up shovel cycles, and give you more production every shift.
Consider what this combination of Koehring excavators and Koehring Dumptors can mean to you in overall operating efficiency, economy — and in time-saving convenience when you standardize on one make of equipment for all of your excavating and hauling. Get more information on Dumptors® and on the 5 sizes of Koehring heavy-duty excavators from your Koehring distributor today — or send for catalogs.
KOEHRING COMPANY
Milwaukee 16, Wisconsin
Subsidiaries: PARSONS KWIK-MIX • JOHNSON
K539



Workmen finish the concrete cap of an abutment. Hairpin rods sticking out of the cap will be incorporated into the end diaphragm, which will be cast after the deck sections have been set.
C&E Staff Photo

(Continued from preceding page)

a Jaeger 11-5 mixer and bucketed to the forms in an Insley ½-yard bucket handled by a Michigan TLDT - 20 truck crane.

Abutments had a row of piles similar to the piers with a concrete cap. Two additional piles were driven on each side of the abutment to support the wing walls. Treated timber stringers were then attached to the sides of the piles, and vertical 4×12 treated-timber backing planks were set up behind the stringers and driven into the ground to form the retaining walls of the abutment and wings. Wings were tied through from one side to the other with 1¼-inch rods. Backfill, placed by a Caterpillar D7 tractor-dozer, was compacted with Le Roi pneumatic tampers powered by a Le Roi 105-cfm compressor.

Power tools were extensively used in the timber work. Sawing was done by a Disston pneumatic chain saw, a Thor air drill was used to drill holes for bolts, and SkilSaws were used by carpenters building forms. Electric power for saws and other tools was supplied by a Hobart generator.

When substructures for most of the bridges were ready, truck-trailers delivered the 3 to 8-ton deck sections to the job, and the Northwest crane picked the sections off the trailers and set them in place on the piers and abutments. Forms were then set for the end diaphragms located between the legs of the deck sections on each pier and abutment. Concrete was chuted through the hole left in the ends of the sections to fill these diaphragms. The series of hairpin rods left protruding from the cap was interlocked with a rod threaded through a line of holes in the end of the deck sections. These rods were incorporated in the concrete diaphragm to tie the deck securely to the piers. Concrete was worked down into these diaphragms by a Viber electric vibrator powered by the Hobart generator. The vibrator was operated through the same hole used for placing the concrete.

The contractor then placed the grout key, packing a very dry grout into the space with a Le Roi pneumatic tamper with a special head. Steel railing posts were bolted to the outsides of the curb sections and Flex-Beam guardrail attached to the posts. Fifty feet of cable guardrail on wooden posts was placed at each corner of each bridge on the approach fills. These bridges were ready for service by the time the regrading of the road—done under a separate contract by Stewart Brothers, Lincoln, Nebr.—was completed.

Personnel

Milo Johnson was superintendent for Christensen Corp. The project was done under supervision of the McCook division office of the Nebraska Department of Roads and Irrigation, of which D. O. Coolidge is division engineer. Virgil Wagner was project engineer for the work and Jack Towne took care of the bridge inspection. Don Cerven managed the Wilson Concrete Co. plant at Grand Island. This efficient and economical bridge design was produced by the Nebraska Department of Roads and Irrigation under supervision of Mr. G. C. Strobel, bridge engineer. THE END

While American productivity has gone up, working hours have gone down from an average of about 70 hours per week in 1850 to the 40-hour week of today, according to a report from the Twentieth Century Fund.

TIMKEN® bearings cut lubrication checks from once a day to once a month

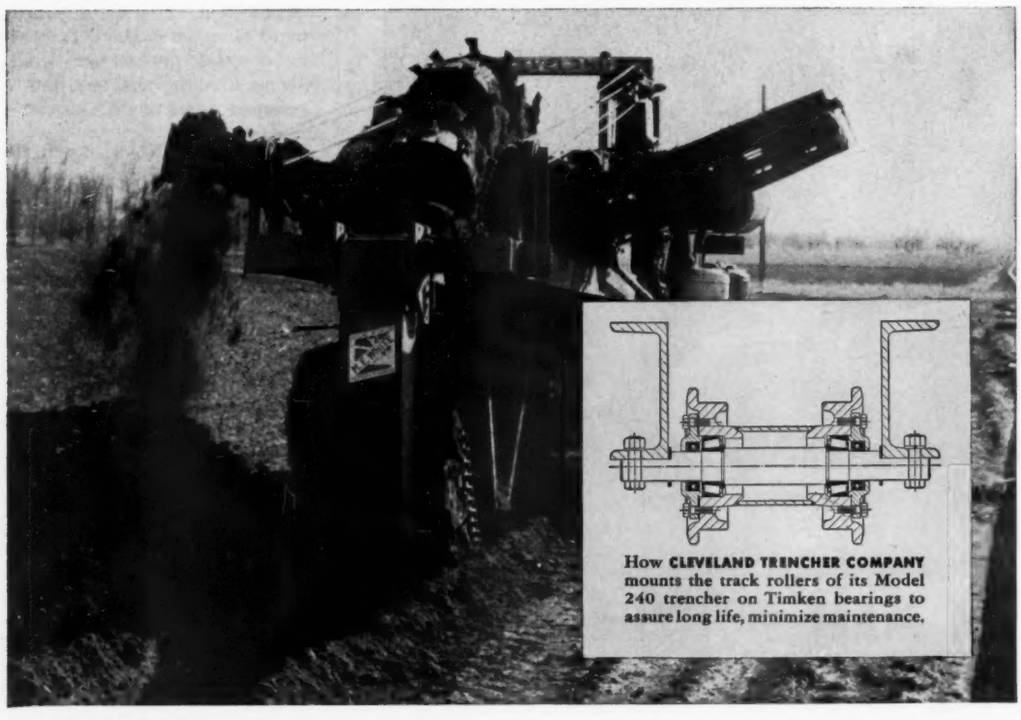
THIS Cleveland trencher's track rollers used to demand a daily oil check. Now, with Timken® bearings, one check a month is plenty. One reason: because of their high accuracy, Timken bearings keep housings and shafts concentric, allow the use of a more effective lubricant seal. The tapered construction of Timken bearings prevents end play in the track rollers, eliminates pumping action which would pull dirt in, force oil out.

Timken bearings practically eliminate friction in the trencher's rollers. Their geometrically correct design and precision manufacture give them a true rolling motion. They normally last the life of the machine because they're engineered for the job and made of Timken fine alloy steel.

This "240" model trencher can dig a ditch 3′ wide and 6′ 3″ deep at 12 lineal feet a minute along wet right-of-way or up sloping hills. To take the combined radial and thrust loads, 68 Timken bearings were specified for the crawlers, transmission and front upper truck. Because of their tapered design, Timken bearings take radial and thrust loads in any combination, hold shafts in rigid, positive alignment, assure smooth gear meshing under sudden starts and stops.

Always specify Timken tapered roller bearings when you buy or build machines. Look for the trade-mark "Timken" on the bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian office: St. Thomas, Ont. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best



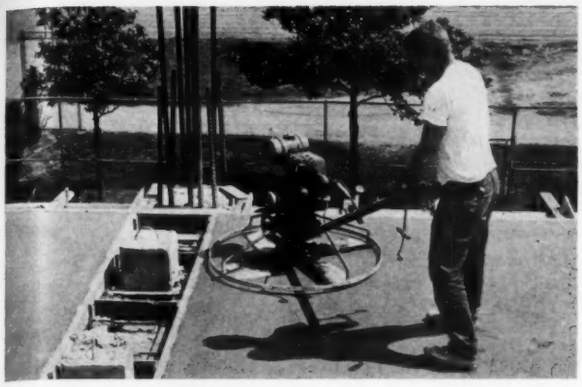
How CLEVELAND TRENCHER COMPANY mounts the track rollers of its Model 240 trencher on Timken bearings to assure long life, minimize maintenance.

OUR OWN NICKEL-RICH ALLOY STEEL MAKES TIMKEN BEARINGS TOUGHER

Nickel makes steel tougher. And we don't skimp on nickel in the fine alloy steel we make for Timken bearings. Our steel-making specialists use the exact amount to give Timken bearings the toughness they need to withstand shock, last longer. We control the quality of Timken bearings at every step in production—from melt shop through final bearing inspection.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

NOT JUST A BALL ◯ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ↑ AND THRUST →◯← LOADS OR ANY COMBINATION



The Superior concrete-finishing machine working on the second-floor slab of this Los Angeles warehouse proved the answer to the contractor's problem when rain threatened to slow or stop altogether concrete work. The machine blends in additional topping where rain has washed the material away.

Case history

Finishing machine saves time despite rains

A concrete-finishing machine employing a combination floating and troweling blade twice saved the day on a lift-slab concrete warehouse job in Los Angeles, according to the contractor, The William Simpson Construction Co., Los Angeles.

Concrete was being placed at the rate of 200 cubic yards every 4½ hours on the new Thrifty Drug Co. warehouse. On two occasions, rain fell just after concrete-placing was begun. Under the old system of machine finishing by trowel, the rainfall would have meant substantial loss in man-hours and material.

However, the efficient operation of the Superior concrete-finishing machine permitted completing the job on schedule. An added advantage lay in the fact that the Superior machine was able to blend in additional topping where rain had caused the material to wash away.

The finisher also worked close to obstructions and maneuvered easily in odd-shaped areas of the pour, the contractor reported.

Folder on masonry blades

■ A folder on masonry blades is available from Cardinal Engineering Corp., 144 Burnside St., Philadelphia 27, Pa.

Cardinal segmented diamond blades illustrated are constructed with holes and slots in the rim that pull back water into the cut to reduce frictional heat. The blades have high-grade diamonds anchored in a special metal bond to prevent spalling or chipping. They are available for use on all types of concrete-cutting saws for cutting asphalt and cured or green concrete.

The literature also shows the Cardinal Non-Brak masonry blades made with pre-attached blotters and special steel inserts. These blades are recommended for use on portable electric saws.

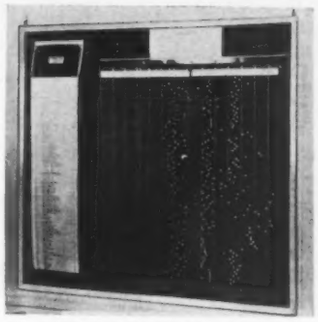
To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 50.

Visual system aids scheduling of operations

■ A visual control board that helps to schedule work and to reassign personnel is available from Wassell Organization, Inc., 11 Sylvan Road, Westport, Conn.

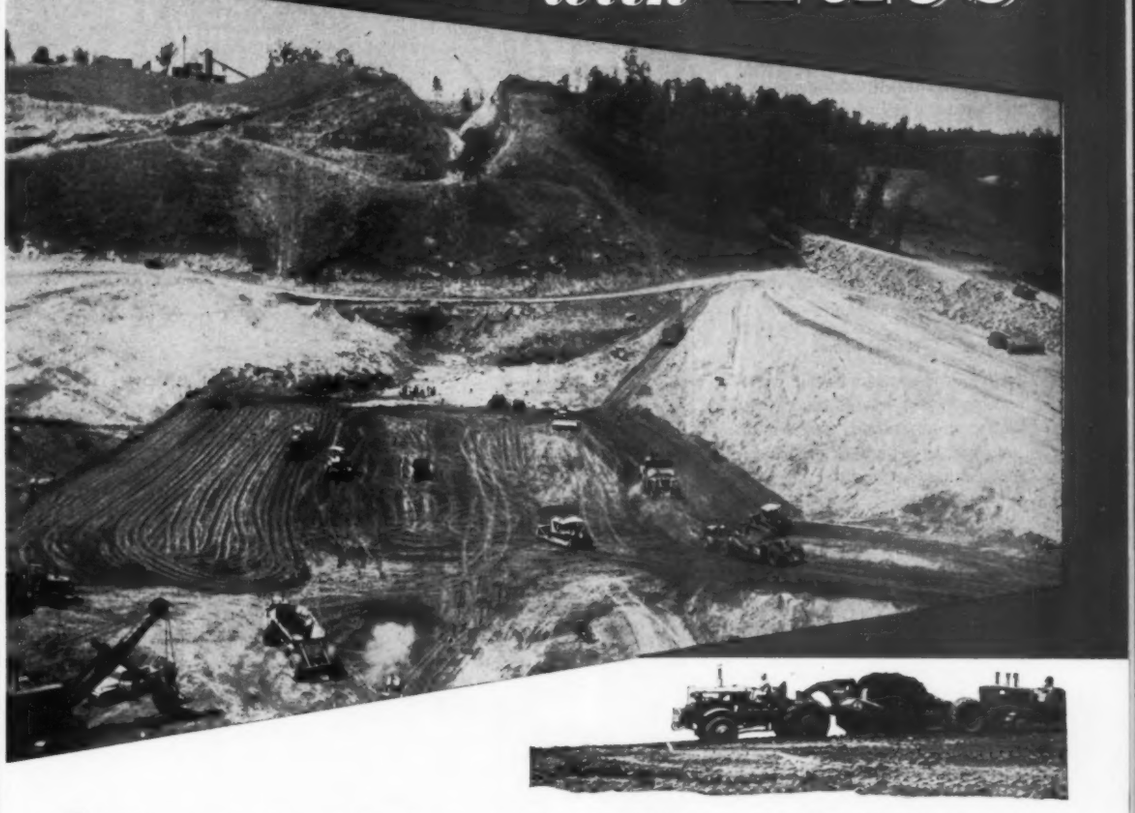
The Produc-Trol board tells at a glance how close to completion each project is and if it is on schedule. It also presents a graphic record of the various jobs on which personnel are engaged and indicates what rescheduling must be done when jobs are completed.

For further information write to the company, or use the Request Card at page 18. Circle No. 114.



The Produc-Trol board.

Moorman builds Buford Dam with "Eucs"



● J. W. Moorman and Son, well known Texas contractor, is using 31 Euclids to move about 4 million cu. yds. of earth and rock at Buford Dam 35 miles northeast of Atlanta, Georgia. This rolled earth fill dam, being built under supervision of the U. S. Army Corps of Engineers, will rise about 200 ft. above the river bed and will be 1,630 ft. long. It's a multi-purpose project that will provide improved navigation in the Apalachicola River during lowflow periods, as well as flood control, water storage for Atlanta and production of hydro-electric power.

Work on the main dam was started in June of 1954 and by January of this year was about 80% completed. In addition to the big yardage of earth fill, over a half million yards of rock must be moved so Moorman is using "Euc" Rear-Dumps and Bottom-Dumps as well as Scrapers. Two Euclid water wagons play an important part, too, in providing the moisture necessary for proper compaction of the fill. A fleet of 16 "Euc" Scrapers with top extensions move loads averaging 16 bank yards on hauls of about 4,000 ft. The Bottom-Dumps and Rear-Dumps are loaded by shovels and draglines in an upstream borrow pit and from stockpiles placed by "Eucs" that worked on earlier contracts for saddle dikes, tailrace and powerhouse excavation.

Yes, Buford Dam is another 100% Euclid earth moving job . . . evidence that leading contractors like J. W. Moorman and Son depend on "Eucs" for their toughest jobs. Your nearby Euclid dealer will be glad to give you facts and figures on the complete line of Euclid equipment and help with your earth moving problems . . see him soon.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

EUCLID THE PIONEER

Euclid Equipment

GM GENERAL MOTORS

MACHINERY

Earthmovers make fast work of grading relocated road

An International TD-24 tractor pulls and a Caterpillar D8 tractor pushes to get a Cat DW21 scraper through hub-deep mud in a ravine. After some of the wet muck is removed, the remainder will be mixed with dry material before fill work starts. *C&E Staff Photos*

The less than 10 weeks spent on moving 600,000 cubic yards of earth for the relocation of a 10-mile stretch of State Route 47 near Chamberlain, S. Dak., was largely due to the fast-moving grading equipment assigned to the work by Dave Gustafson & Co., Inc., Sioux Falls, S. Dak.

Eight Caterpillar DW21 self-powered pneumatic-tire scrapers formed the backbone of the two spreads used. The relocation, including construction of two bridges let under a separate contract, called for the new section of road to be built a few miles west of the stretch which will be flooded as the water level rises behind Fort Randall Dam on the Missouri River.

Tough section

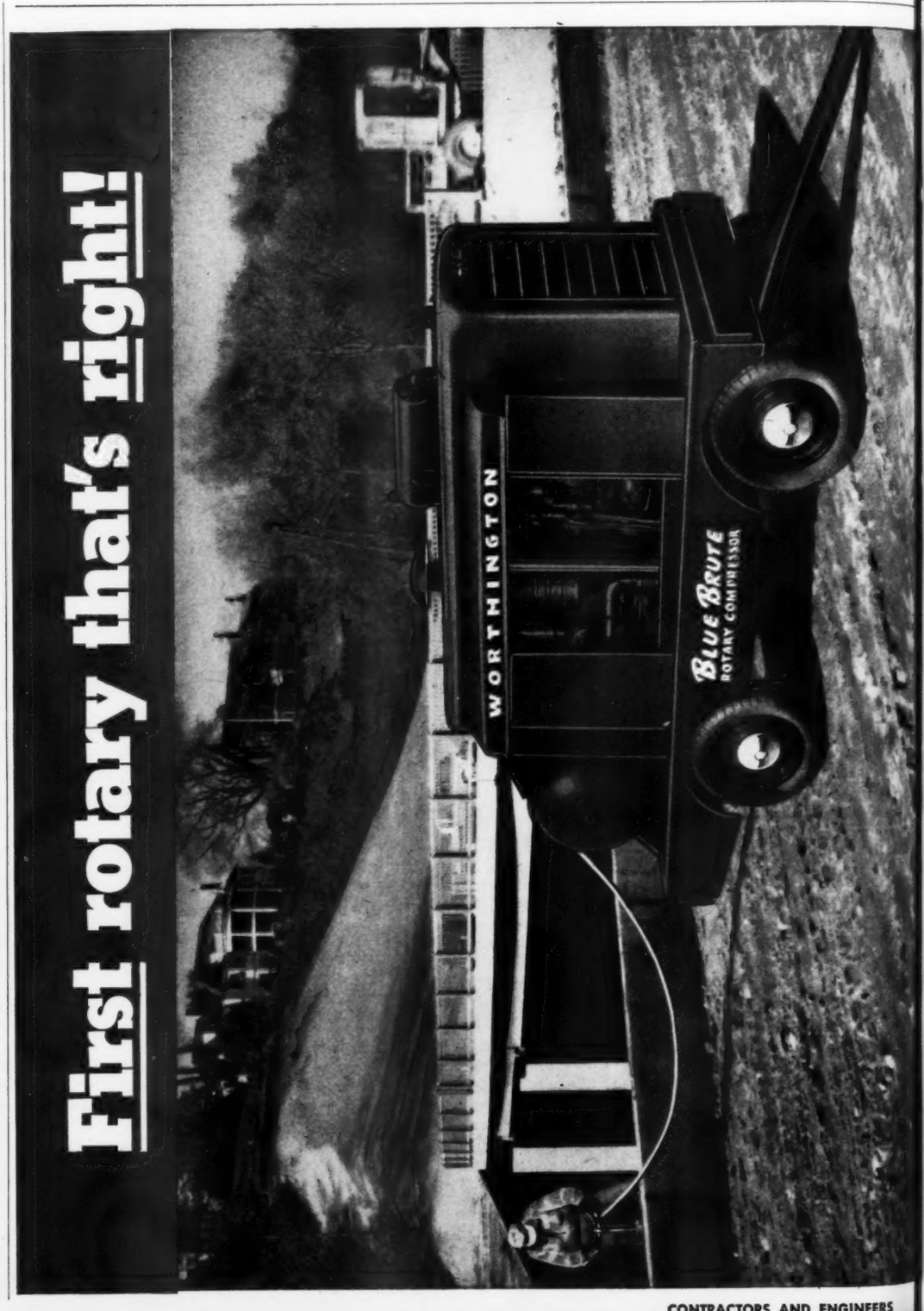
Gustafson assigned one grading crew to work north of the river. The second crew started work south of the river, in a tougher section which included one balance with 347,200-cubic-yard stations of overhaul. Most of the other balances on the job were within the 1,000-yard free-haul distance.

Running on a general north-south alignment, the highway makes a sweeping curve to the west near the mid-point of the job to dip into the valley of the White River. The road is carried across the river by a five-span steel and concrete bridge, then swings south to the end of the section, slashing out of the valley through hills with cuts up to 56 feet deep and more than 300 feet wide. These hills were so steep that scrapers had to be pushed to the top at the start of the cut. Material excavated was used to build a long fill across the river valley to the bridge.

Despite the steep grades and long hauls, the speedy motorized scrapers made the dirt fly. On a haul which measured 2,900 feet, the DW21 scrapers made the round trip in less than 8 minutes, including the 1½ minutes spent on the loading cycle.

In addition to the four big scrapers, the south spread had an International TD-24 push tractor, an Allis-Chalmers HD-20 push tractor, a Caterpillar D6 tractor-dozer, a Cat D8 pulling a Gebhard sheepsfoot roller, and a Caterpillar No. 12 motor grader.

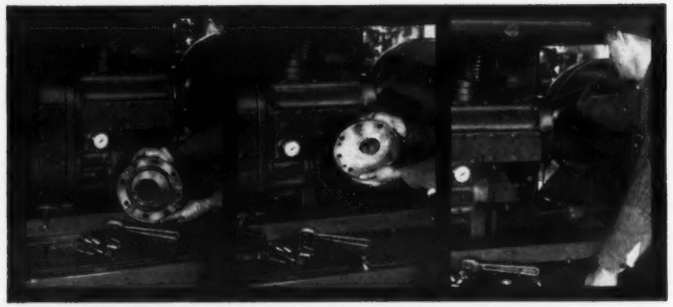
A Caterpillar D8 tractor - dozer


First rotary that's right!
WORTHINGTON
BLUE BRUTE
ROTARY COMPRESSOR
NEW COMPRESSOR STAR! Besides its three big features, the new Blue Brute boasts a two-stage oil separator, low-set fuel tank, separate air and oil tanks, and shorter wheel base. It all adds up to the sturdiest, easiest-to-use, most practical rotary yet.
. . . and our torture tests say so
Every feature in the new Worthington Blue Brute Rotary has been

. . . and our torture tests say so

Every feature in the new Worthington Blue Brute Rotary has been proved and re-proved by many months of the most grueling tests we could dream up. Actually, that test period represents a span longer than the service life of the average compressor.

This powerful new rotary is ready now with *all* the features you want. Look below for three of the most important ones.



QUICK, EASY INSPECTION. For example, an unskilled mechanic can replace a rotor blade in a jiffy — right in the field! Photos tell story of speedy blade removal. (1) Take out machine bolts and remove bearing cap . . . with needle bearing in place. (2) End plate is removed without disturbing inner-bearing race on rotor shaft. (3) Rotor blade removed for inspection or replacement. That's all there is to it!

NEW COMPRESSOR STAR! Besides its three big features, the new Blue Brute boasts a two-stage oil separator, low-set fuel tank, separate air and oil tanks, and shorter wheel base. It all adds up to the sturdiest, easiest-to-use, most *practical* rotary yet.

EASY-ACTING RELIABLE CLUTCH lets you warm up the engine *before* you cut in the compressor. Result: less wear and tear, quick starts *all* the time. Symmetrical clutch also assures vibrationless operation at all speeds and acts as safety connection between engine and compressor in case of serious malfunction of either.

FULLY SELF-DRAINING COMPRESSOR eliminates settling of oil and water in cylinders, inter-stage chamber or discharge. The Blue Brute's unique cylinder arrangement gravity-drains *all* oil and moisture during shutdowns. Never any gummy accumulation to damage blades on cold starts.

If you haven't seen the new Blue Brute Rotary yet — see it now at your Worthington distributor's. Or write for Bulletin to Worthington Corporation, Section H.4.18, Harrison, N.J.

WORTHINGTON

IF IT'S A CONSTRUCTION JOB, IT'S A *BLUE BRUTE* JOB

ROCK DRILLS • WAGON DRILLS • PAVERS • CONCRETE MIXERS • PORTABLE PUMPS

On the north spread, a DW21 scraper loads hard soil with an assist from an International TD-24, equipped with a rear push block, and a Caterpillar D8. With plenty of power applied, the material shaves off in thin slices.

equipped with a rear boom broke the trail for both crews, grubbing the small amount of brush and stumps from the right-of-way, laying culverts, and cleaning up to make way for the scrapers.

Shale encountered in the deep cuts had to be loosened before it could be loaded by the scrapers. A Caterpillar D8 tractor, which normally handled the sheepsfoot roller on the fill, hooked onto a LeTourneau ripper and scarified the shale so it could be loaded.

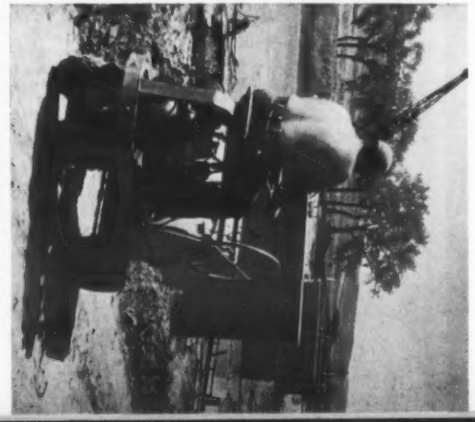
North spread

The spread working north of the river had three push Cats, two Caterpillar D8's and an International TD-24 to help load the four Cat DW21 scrapers. Two Cat D6 tractors handled the dozing and pulled the sheepsfoot on the fills, and two Caterpillar No. 12 motor graders shaped cuts and fills and maintained haul roads.

Most of this work involved short hauls, and the push tractors were kept busy. The TD-24 had a rear push block, permitting one of the available D8's to team up for a double-push. The soil here was very hard, but it sliced easily in thin layers and pulverized well in the scraper bowls when plenty of power was applied. On a haul of approximately 300 feet, these rigs made the round trip in an average of 2½ minutes, including an average loading time of 50 seconds.

One lubrication crew handled the daily servicing of all equipment in both spreads. A Chevrolet 4×4 army surplus truck carried a Graco five-reel lubricating setup with track, transmission, and chassis lubricants, and air. Although some of the rigs were greased during the lunch period or when they were stopped for some other purpose, greasing was normally done at night when the 10-hour shift shut down.

(Concluded on next page)



One of the 1/3-yard Whiteman Power Buggies, used to transport concrete for the White River Bridge, heads downgrade to a crane which buckets the material to the forms.

(*Continued from preceding page*)

Bridges and culverts

The largest of the two bridges on the project was the White River crossing, a five-span bridge having an over-all length of 487.5 feet. The deck consists of a 30-foot roadway bounded by two curbs 12 inches high and 14 inches wide. A steel railing is mounted on the curbs.

Piers are founded on 12-inch steel H-piles driven 60 feet to bearing in the underlying shale. A Unit Model 1020 crane with swinging leads drove the piles with a Vulcan 2,500-pound drop hammer. Abutments rest on treated timber piles about 30 feet long which were driven by the same rig. Since the river was almost dry during construction, no cofferdams were needed to construct the pier footings.

Plate girders 60 inches deep are continuous over the four long spans of 96, 120, 120, and 95 feet. The one short end span has 33-inch WF rolled girders. The girders are spaced 8 feet 10 inches apart. A 6-inch concrete deck slab spans between the girders and overhangs 2 feet 11 inches on each side. Erection of the steel girders was handled by Gustafson's crew with the Unit Model 1020 and a Northwest crane.

Concrete for the structure was mixed in a plant set up on the east bank. Aggregates were weighed from a Winslow Binanbatch and discharged into the skip of a Rex 10-S mixer, and sack cement was added by hand. The mix was chuted to two Whiteman Power Buggies which hauled directly to the forms where possible. For pouring piers and abutments, the Whiteman Power Buggies dumped their 1/3-yard loads into a bucket which was hoisted to the forms by the Unit crane. Vibration was provided by an Ingersoll-Rand pneumatic vibrator.

An unusual type of form hanger was used to suspend deck forms from the steel girders. Pieces of 2×2½-inch angle about 3½ inches long were tack-welded to the under side of the top flange of the girders at 4-foot intervals. Double 2×8 joists were hung from these clip angles by a single bolt at each end. The ¾-inch plywood form panels, backed by 2×4's, rested on these joists. No shoring or blocking was needed, since the entire weight of the form and concrete was supported by the welds. After the form was stripped, the clip angles were broken off with a hammer blow and re-used.

The second bridge on the project consists of a five-span continuous concrete slab on concrete piers supported on 8-inch steel bearing piles. This bridge is 209 feet long and has a deck section similar to the first one. In addition to the two bridges, the project included the laying of 3,000 feet of concrete and metal culvert pipe, in sizes ranging from 18 to 72 inches, and 240 feet of 4×6-foot cattle pass.

Personnel

The project was planned and supervised by the South Dakota State Highway Commission with financial assistance from federal funds. Superintendent of the grading operations for Dave Gustafson Construction Co., was L. S. Malm. Assistant superintendent was Alfred Hunter. Bridge construction was supervised by Tex Bidwell. Resident engineer for the South Dakota State Highway Commission is Raymond Ryan. R. K. Morrell is construction engineer and H. C. Rempfer is state highway engineer for the commission. THE END

TAKE OUT PAVING IN ONE PASS

Save as much as 25%

on a job with an

ATECO ROCK RIPPER

Contractors using the ATECO Rock Ripper have estimated savings up to 25% in time, money and manpower. On big projects this tool can pay for itself and pay extra dividends through time-saving alone.

The ATECO Rock Ripper will take out cement, asphalt, Belgian block, rock shale and other types and combinations of paving in one pass. On the project pictured here surfaces up to twenty inches thick were removed.

MOVE 300 YARDS OF DIRT

in 8 hours with this

ATECO LOADER

and John Deere 40-C

That's the kind of performance you can expect with this fast-acting team—the Deere 40-C Tractor and a heavy-duty Ateco Loader. The loader's quick bucket action on this sturdy tractor speeds even the most difficult jobs—makes your excavating and loading operations more profitable.

SAVE ON POWER

Carry a full load every trip with the

ATECO SCRAPER

The Ateco Scraper is designed to agitate the material being loaded so that it fills the bowl completely and piles it high in the center. This assures a big payload but it requires no extra power to handle because the Ateco Scraper is so efficiently constructed for loading, dumping, spreading and finishing.

SEE YOUR ATECO DEALER AND GET ALL THE DETAILS OF THE ECONOMY AND EFFICIENCY OF EARTHMOVING WITH ATECO EQUIPMENT

ATECO by GREENVILLE STEEL CAR COMPANY

EARTHMOVING EQUIPMENT

GREENVILLE, PENNSYLVANIA

ATECO Division, Greenville Steel Car Co.
Greenville, Pennsylvania

I'd like information on the ATECO
☐ Rock Ripper ☐ Loader ☐ Scraper
My construction equipment is purchased from:

DEALER'S NAME_____

ADDRESS_____

MY NAME_____

ADDRESS_____

Folder describes features of all-steel hand winches

Strong construction is the chief feature of Beebe hand winches, according to a new folder available on request. Designed with only 8 parts, the winch-hoists are made entirely of high-grade steel. They are assembled without keys, pins, or set screws that might strip in operation.

Beebe hand winches are available in 2, 5, and 15-ton models in 8-drum sizes. They are recommended for hoisting, lowering, and pulling on such applications as timber and steel erection in building, bridge, dam, and other construction. The hoists mount and operate in any position.

The all-steel winches are equipped with an internal-gear main drive that minimizes friction and a positive-cam-action internal brake. A spring-operated "holding dog" locks external gears with the hoist in any position. Instant gear-change design eliminates idle gears and gear-shift parts. A free-spooling feature makes it possible to pay out the line quickly.

The winches can be converted to V-belt and sprocket drive for power applications. The literature shows the use of an electric drill or motor for motive power.

To obtain Catalog No. 45 write to Beebe Bros., 2724 Sixth Ave., S., Seattle 4, Wash., or use the Request Card that is bound in at page 18. Circle No. 161.

This Cleveland backfiller with side crane easily handles 36-foot sections of cast-iron pipe on a water-main project in Kalamazoo, Mich. The fast pipe-laying operation enabled the backfiller to work close behind the trench-excavating crew, eliminating the danger of cave-ins in the soft ground.

Case history

Construction time halved with speedy backfiller

Construction time on an 8-inch water-main project in Kalamazoo, Mich., was cut in half and costs were reduced materially when the contractor put a Cleveland 80-W tractor-mounted backfiller with side crane on the job to handle pipe-laying and backfilling.

Previously, trenching had been restricted to 4 hours a day because the pipe-laying crew could not keep close behind the trench-excavating crew, and the danger of cave-ins made it impossible to leave the trench open for long.

The contractor for the City Light & Water Utilities Co. knew that the Cleveland backfiller could handle and lay pipe quickly and accurately. He found that the machine handled the 36-foot sections of cast-iron concrete-filled pipe with ease, and that the Cleveland unit also backfilled the 2-foot-wide by 6-foot-deep trench while keeping right behind the excavating operation.

With one man operating the Cleveland backfiller, and full-time trenching possible just ahead of the machine, the contractor solved his problem to the tune of substantial savings in both time and money.

Direct-reading level rod

■ A direct-reading level rod for engineers, contractors, and builders, with which elevations may be taken without additions or subtractions of backsights or fore-sights, is described in a folder available on request.

The Lenker L-E-Vation rod is made in two sections. The upper or face section has a 10-foot graduated endless steel band that runs over end rollers to bring any reading into view. A latch on the lower or back section locks the band in any required position.

Made of maple, the rod is 5.4 feet long closed and 10 feet long extended. The steel band is available graduated to feet, tenths and hundredths of feet, and in inches and eighths.

To obtain this literature write to Lenker Mfg. Co., 599 Chestnut St., Sunbury, Pa., or use the Request Card at page 18. Circle No. 19.

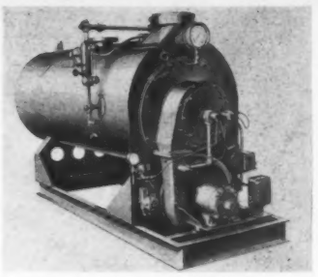
The U. S. output of goods and services in 1950 was 25 times what it was in 1850, and the job required only eight times as many workers, according to a report from the Twentieth Century Fund.

Combination unit produces steam and hot water

■ A new type of boiler designed by the Cyclotherm Division, U. S. Radiator Corp., Oswego 1, N. Y., is basically a hot-water generator, but converts to steam operation in a few seconds. Both the steam and hot-water phases operate automatically once the proper type of operation is selected.

The new unit operates on light oil, gas, or a combination of light oil and gas. It is rated as a 60-hp steam or hot water generator.

As a hot water generator, the Cyclotherm unit generates 2,010,000 Btu per hour. Working pressure is 30 psi. The unit will deliver 2,480 gallons of hot water per hour with a 100-degree rise in temperature.



As a steam generator, the unit delivers 2,070 pounds of steam per hour. Operating pressures range from 15 to 200 psi. On change-over from hot water, the unit will deliver steam in five to ten minutes.

For further information write to the company, or use the Request Card at page 18. Circle No. 10.

TOUGH LOADING

Eimco Tractor Excavator in open pit mine. Loading capacity in this rugged rock pile is at the rate of 1500-1800 tons per shift per machine.

Eimco Tractors with Eimco excavating attachments are proved rock loading machines. This 1½ cubic yard tractor excavator has a digging force of 36,000 pounds at the bucket lip. Any other type of rock loading equipment of this capacity able to exert this digging force would require an investment of two to three times that of the mobile efficient Eimco loader.

Eimcos load faster (at the rate of 3 to 5 yards per minute in rock) even when working on uneven ground. They are easier to operate — only two small handles control all tractor movements and they are more maneuverable because they have independently controlled tracks so that one track can be run forward while the other runs reverse.

The Eimco Tractor mounts its loading attachment directly to the tractor frame inside the track assembly. This is a unique feature exclusive with Eimco. Only Eimcos have been designed with the superior strength to permit mounting attachments on the frame so that they will work longer than conventional tractors, with less down time and a minimum of maintenance attention.

Yes! The tough jobs can be easily handled by Eimcos. You can safely put them in against much larger, much more expensive equipment and watch them hold their own. In the job pictured above, where one bench of an open pit is being worked, the greatest difference is apparent in moving from bench to bench. The Eimco required four minutes. The larger, more expensive equipment requird half a day with all hands pulled off their drilling, shooting and dozing jobs to help.

Investigate the Eimco Tractor and its loading attachment. It will show you new ways to cut costs — be low on the next job.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Texas Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Baltimore, Md. Pittsburgh, Pa. Pasadena, Calif. Houston, Texas London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa

D-104

12-B 21 630 40-H

MACHINERY

Watering borrow material cuts cost of earth-fill dam

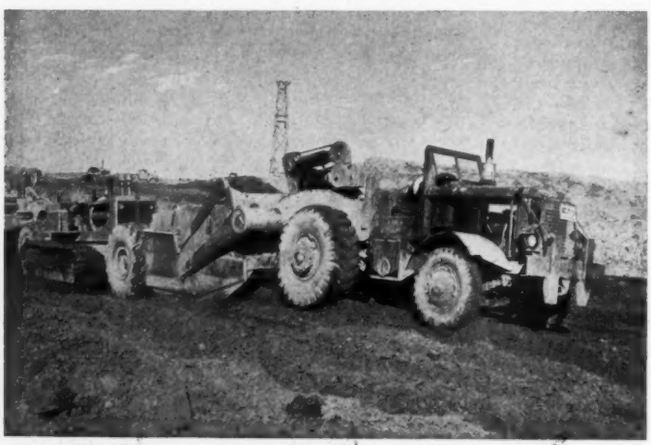
Sprinklers supply moisture to pits before excavation starts, eliminating need for watering fill and manipulating soil

by RALPH MONSON, field editor

Two Deming 8-inch vertical turbine pumps, powered by General Motors 2-71 diesel engines, supply water to the automatic sprinkler system from a deep channel dredged in the Missouri River. *C&E Staff Photos*

A partially excavated borrow pit is given an additional wetting down by Rainbird sprinklers installed on the pipeline system. Adding most of the water to the fill material at this stage cuts cost of moisture application by about half.

Wet fill material for the impervious core of the dam is dumped to a Euclid by a P&H shovel with an Esco 4½-yard bucket. The bottom-dump "Eucs" hauling the fill material are equipped with Allison torque-converter drives.



Scarified shale for the uncompacted fill is loaded by a Euclid scraper with an assist from an Allis-Chalmers HD-20. Working around the clock, the contractor's equipment is placing an average of 45,000 cubic yards daily in the dam.

By watering soil in borrow pits prior to excavation—instead of sprinkling water on the fills—the contractor on the stage III earthwork at Oahe Dam just north of Pierre, S. Dak., is saving not only time but a considerable amount of money.

Under the prewatering procedure, pumps lift water from the Missouri River and from wells to a system of sprinklers which water the surface of the ground. In the several months of "curing" which follow, the water is distributed uniformly through the soil, penetrating to a considerable depth. The material is then excavated, spread on the fill, and compacted without additional manipulation.

While it is not feasible to add all the necessary water by this irrigation method, the contractor estimates that about 70 per cent can be applied in this manner and the remaining 30 per cent added on the fill. Job records show that applying water to soil in borrow pits with the sprinkling system costs about half as much as placing water on the fill with haul units.

The contract for stage III is held by Lytle & Green, a joint-venture firm composed of C. F. Lytle Co., Sioux City, Iowa, and Green Construction Co., Inc., Des Moines, Iowa. It calls for 11,500,000 cubic yards of compacted embankment in the main dam section on the west bank of the river, and is scheduled for completion in November. Oahe Dam, started in 1948, is expected to reach the diversion stage in 1958, and to be producing power by 1961. An additional year or more will be required for finishing touches. When completed, the dam will be one of the largest rolled earth dams in the world. Its reservoir will extend 250 miles up the Missouri Valley to within five miles of Bismarck and Mandan, N. Dak.

Material for stage III earthwork is being obtained from excavations in the intake area, stilling basin, discharge channel of the outlet works, and discharge channel of the spillway.

Pumping water from river

Though most of the borrow pit areas are close to the river, they are located high above water level. Natural ground water has a tendency to drain out toward the river, leaving the subsoil in a very dry condition. In places where water is applied to natural ground having some vegetation, it soaks readily into the soil and there is very little loss due to runoff even on steep slopes. In an area stripped of vegetation and topsoil, the water ponds and runs off quickly when applied at the same rate.

An application of about 1 cubic foot of water is needed to increase the moisture content of a cubic yard of soil by 1 per cent. Starting as far as possible in advance of excavation, the contractor applies water in the desired amount and leaves the ground to "cure" for a period of three months or more. In this time, the water penetrates 20 to 24 feet in sand and up to 20 feet in silt, distributing itself rather uniformly.

Since the natural soils usually contain less than 7 per cent moisture, it has been found desirable to build the moisture content up to about 16 per cent in silts and 13 per cent in sand and gravel. This requires the application of more than four feet of water where penetration is 20 feet or more.

To provide this water, as well as water for use on the fill and for sprinkling haul roads, Lytle & Green set up an extensive system of pumps and pipelines. One setup included two Deming 8-inch 15-stage vertical turbine pumps mounted on a timber bridge over a ravine leading to the river. This ravine was dredged out to bring the water in to the pumps, and the suction pipes of the pumps were extended out toward the river under water. Each pump was driven by a General Motors 2-71 diesel engine connected to the pump through a gear box.

The discharge from one of these pumps was metered through a Worthington meter and then fed through a series of laterals to 18 Rainbird sprinkler heads located about 80 feet above the river. Sprinklers were spaced in a grid about 60 feet apart each way to cover the area completely.

The second of these pumps served a set of 18 sprinklers located about a mile away and 340 feet above the river, atop one of the highest hills in the area. The 6-inch discharge line from the Deming pump carried the water to a Gorman-Rupp booster about half way up the hill. This pump pushed the water to the top of the hill and provided pressure to run the sprinklers. Water applied by this system was measured by a Sparling 6-inch meter located on the top of the hill just ahead of the first sprinkler.

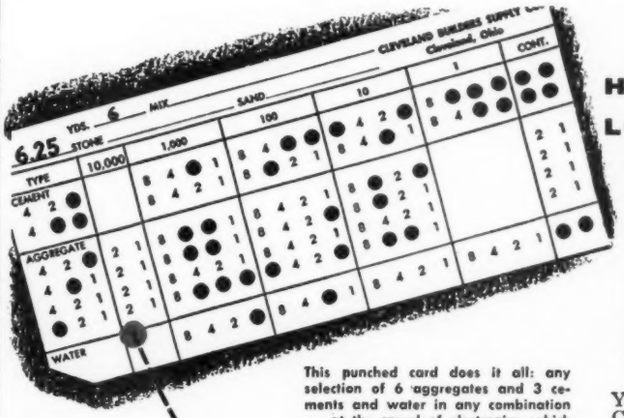
In another area a Jaeger 10-inch centrifugal pump drew water directly from the river and pumped it to a Jaeger 6-inch booster. This supplied a system of 22 sprinklers located more than 400 feet from the pump and 60 feet above the river.

Water hauled from tanks

Water for the fill and haul roads was pumped into large storage tanks which supplied haul units. One of these setups included a Jaeger 10-inch pump which drew water from the river and pumped it through two 6-inch lines to a 10,000-gallon tank situated on a high spot about 120 feet away. The total static head here was about 50 feet.

Two 12,000-gallon tanks in another location were supplied by a Deming vertical turbine pump set in a well near the river. This pump, driven by a GM 2-71 diesel engine through a Johnson gear head, pushed the water through 1,400 feet of 6-inch pipe against a static head of about 40 feet. These two interconnected tanks were equipped with an 8-inch discharge line and a quick-opening valve. A tank-truck operator simply pulled a rope attached to a lever on the top of the tank to fill a 3,000-gallon tank in about a minute and a half. Three Caterpillar DW10 tractors and two Euclid tractors pulled tank wagons hauling 4,500 gallons per load to the fill. Ford F-8 trucks with 3,000-gallon tank trailers took water from these

A Marion 111-M shovel with Esco 5-yard bucket swings a bite of moist soil to a waiting end-dump truck in one of the borrow pits. The watered soil is checked for moisture content before excavation begins.



This punched card does it all: any selection of 6 aggregates and 3 cements and water in any combination — at the speed of electronics, which is 186,000 miles per second.

HAVE **YOU** LOOKED INTO THE

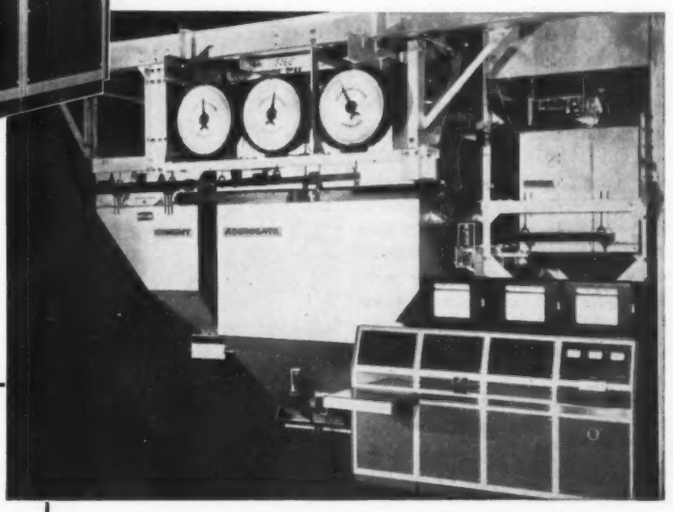
BUTLER XK-1 Punched Card Electronic Batcher?

You should, because BUTLER Punched Card Batching is changing production-planning in the Ready-Mixed Concrete Industry. BUTLER Punched Card Batching is of *immediate* importance, for the equipment *can be installed on any existing Ready Mixed Plant* — no matter who the manufacturer.

And the BUTLER XK-1 is of *immediate* importance because of absolute quality-control. The Ready Mixed operator who converts to BUTLER Punched Card Batching has an enormous competitive advantage. The BUTLER XK-1 takes the costly human element out of batching. That alone carries a powerful selling impact for *your* concrete.

But just as important is the cost-saving *simplification* of paper work for your organization.

The punched card is a legal, permanent, finger-tip file-record which can be re-used tomorrow or a year from now. Invoices can be typed from the card — or with auxiliary bookkeeping, equipment, accounting can be wholly automatic. And your dispatcher can also be your batcher.



Write BUTLER BIN Company
or ask your BUTLER distributor for full details. Use the coupon below, 'phone or send a postcard. But do it now to get the advantage of the BUTLER XK-1 in *your* market.

BUTLER BIN CO.
971 Blackstone Ave.
Waukesha, Wis.

Please send me complete description and specifications of the BUTLER XK-1 Punched Card Batcher

Name .....

Company .....

Street .....

City ..... State .....

BUTLER BIN COMPANY
971 BLACKSTONE AVE. • WAUKESHA, WISCONSIN

Since moist material tended to stick in the dump box, the contractor rigged up a special scraper to clean the trucks. It is shown here, attached to the dozer arms of an International TD-9 tractor, doing the job in a single pass.

C&E Staff Photos

same tanks to water haul roads and work areas.

Pumping records indicated that as much as 600,000 gallons of water were applied by sprinklers in a day. The average amount handled by haul units for all purposes was probably less than 300,000 gallons daily.

Pipelines from the pumps to the tanks and sprinkler layouts were made of 6-inch steel "invasion pipe". Within the grid of sprinklers the pipe size was stepped down to 5, 4, and 3 inches. These sizes were all Anderson-Miller aluminum pipe with snap couplings and internal expanding rubber gaskets. This lightweight pipe was easily handled in long lengths by the one or two men who moved the layout from place to place.

Rugged service roads

Building and maintaining roads to the pumps and to the sprinkler layouts presented difficult problems. Some of the rough trails built by tractor-dozers could be used in only one direction—downhill. Even the tractors which built them might have had difficulty getting back up the steep grades. But under all conditions a fuel truck made the complete rounds twice every day to supply the engines with fuel, and with the same regularity the lubricating crew got around to see that all pumps and engines were properly serviced.

Only one man was regularly assigned to take care of the pumping and sprinkling equipment. He was assisted by a 5-man survey party whenever it was not engaged in engineering duties. Supervision of these operations was placed in the hands of the project engineer. This proved a satisfactory arrangement, since the survey party found plenty of time to move pipes, check sprinklers, and keep an accurate record of the area watered and the amount of water placed.

The irrigating work continued day and night from early March until late November despite South Dakota's cold weather. As long as the pumps continued to run and water was circulating through all the pipes, there was little danger of freezeup even when temperatures were below freezing. When any part of the system was shut down during cold weather, all pipes were drained through valves placed at low points. Alternate freezing and thawing of the ground apparently had no effect on the penetration or distribution of the water in the soil.

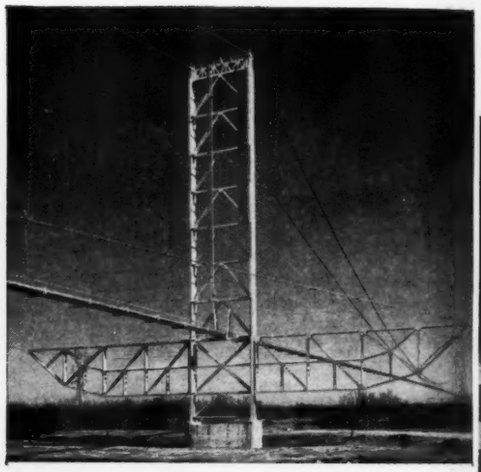
After an area has been watered, and before excavation starts, the ground is checked for moisture content by drilling a series of 8-inch holes and analyzing the material recovered. A Joy truck-mounted drill, which takes care of many drilling jobs, also makes these borings.

Excavate with shovels

When the borings indicated that the proper amount of water was in the soil, excavation began. Two shovels, a Marion 111-M with an Esco 5-yard bucket and a P&H 1055 with an Esco 4½-yard bucket, loaded sand and silt into a fleet of Euclid 25-ton end-dumps equipped with Allison torque-converter drives. A Sierra loader and a Bucyrus-Erie 54-B dragline with a Hendrix 3½-yard bucket loaded material from other pits into a fleet of Euclid bottom-dumps.

As the haul units dumped the material on the fill, tractor-dozers spread it in uniform layers. A fleet of Gebhard and Ferguson double sheepsfoot rollers and Ferguson and Bros 50-ton pneumatic rollers towed by Caterpillar D8 tractors quickly compacted the material to the required density. The smooth hard surface of each course was carefully scarified and watered before the next course was started, assuring a good bond between the layers. With these materials adequately irrigated, it was necessary to

Tiger Brand is the



Rope Bridge For A Pipeline

This unique suspension bridge on the Atchafalaya River near Melville, Louisiana, carries two 30" lines on the main line of Transcontinental Gas Pipe Line Corporation. With the exception of the towers the entire structure is made of galvanized Tiger Brand Wire Rope. Rope is used not only to suspend the two pipes but also to stiffen them horizontally to resist wind loads. Approximately 20 miles of rope were used in this bridge and every inch of it is Tiger Brand because of Tiger Brand's known high quality and dependability.

On Any Job

Hundreds of combinations of strengths, sizes, constructions, lays and steels are available in the complete line of Tiger Brand Wire Ropes. As a result, you can get a Tiger Brand Rope to suit every lifting job you will ever encounter—and you can depend on its performance. Tiger Brand has proved in actual service that it lasts long. Get in touch with your local Tiger Brand Distributor next time you need dependable wire rope.

add only enough moisture to replace that lost by evaporation.

One of the difficulties in handling the moist material was that it had a tendency to stick in the bottoms of the dump boxes. To overcome this trouble, the contractor devised and built a special scraper which was attached to the dozer arms of an International TD-9 tractor. While the dump box of the Euclid was in the raised position, the scraper cleaned it in one quick pass.

Ripper scarifies shale

Pierre shale, comprising a quarter of the total excavation under this contract, contained about 25 per cent moisture in the natural state. Since it was used only in the uncompacted fill, no water was added during the placing operations. The only treatment given the material was four passes with a spike-tooth roller to break up large chunks of shale. This provided a fill slightly more dense than one built by the end-dump method.

Shale was broken up by a ripper so it could be handled by scrapers. Here one of the test models of the giant new Caterpillar D9X tractor had an opportunity to demonstrate its power. Sinking the tooth of a Caterpillar ripper full depth into the shale, the big Cat plowed along in third gear at an astonishing speed. This ripper kept the shale scarified for a fleet of 20 scrapers and still had time to go over to the embankment and pull one of the rollers on a part time basis.

A fleet of 14 Euclids and 6 Caterpillar DW20 scrapers loaded the broken shale with the aid of 8 Allis-Chalmers HD-20 push-tractors. These rigs hauled 20 to 21 cubic yards of bulk material which was compacted on the embankment to an average of about 16 pay yards per load. A few fairly large chunks of shale made loading a little difficult. However, by the time these had been loaded, unloaded, and manipulated with the spike-tooth roller, the material was well pulverized.

With the tooth of a Caterpillar ripper sunk to full depth, an experimental Caterpillar D9X tractor easily keeps shale scarified ahead of a fleet of 20 scrapers on the Oahe Dam project in South Dakota.

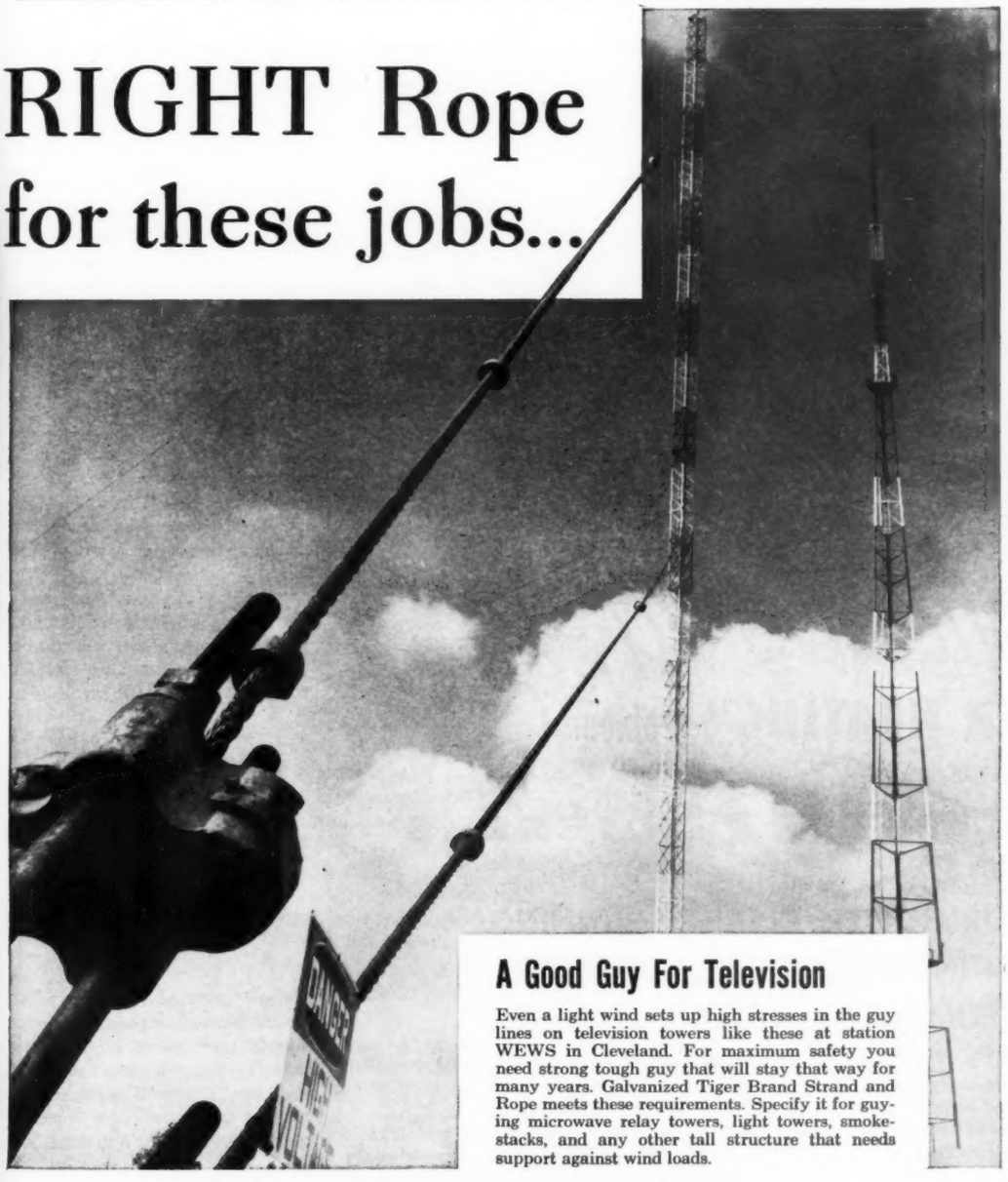
Working two 10-hour shifts, crews built the embankment up at the rate of 45,000 cubic yards per day and kept the equipment in operation almost around the clock 6 days a week. For night operations, the contractor set up 13 big lighting towers to illuminate work areas. Each of the 54-foot-high towers carried eight 1,500-watt floodlights, and each had its own 20-kw Katolight generator driven by a General Motors 2-71 diesel engine. Pipe runners under the base of each made it possible to tow the towers from place to place with a tractor.

Place cutoff wall

One part of the stage III earthwork operation called for the placing of 18,000 linear feet of sheet piling in the form of a cutoff wall down the center line of the dam. A Bucyrus-Erie 54-B crane set the sheets and handled the jetting operation which sunk them down through the alluvial materials to the underlying shale. A Gorman-Rupp four-stage jetting pump driven by a Caterpillar engine forced a high-pressure stream of water through a 4-inch extra double-strength pipe which jetted ahead of the sheets. At the same time, a McKiernan-Terry No. 5 hammer powered by a Gardner-Denver 500-cfm compressor tapped the sheets down. A Bucyrus-Erie 38-B crane with Vulcan 50-C hammer powered by a steam boiler drove the sheets firmly into the shale.

With the work spread over a wide area, a Motorola mobile radio system was pressed into use to save a great deal of time and simplify many operations. Nine of the VHF mobile units were installed in the cars and pickups of supervisory personnel. The base station at the job office was linked to a remote-control unit at the

RIGHT Rope for these jobs...



A Good Guy For Television

Even a light wind sets up high stresses in the guy lines on television towers like these at station WEWS in Cleveland. For maximum safety you need strong tough guy that will stay that way for many years. Galvanized Tiger Brand Strand and Rope meets these requirements. Specify it for guying microwave relay towers, light towers, smokestacks, and any other tall structure that needs support against wind loads.

AMERICAN STEEL & WIRE
DIVISION
UNITED STATES STEEL, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMERICAN TIGER BRAND WIRE ROPE
Excellay Preformed
USS
UNITED STATES STEEL

Working near the haul road, a Bucyrus-Erie 54-B dragline uses a Hendrix 3½-yard bucket to scoop fill material into a bottom-dump Euclid. In the background, a motor grader blades the haul road. *C&E Staff Photo*

shop, and through this system the survey party working on the watering system in a remote area was able to be called for survey service in a few minutes.

All work on stages I, II, and III of the earthwork is located on the west bank of the river where the spillway and outlet works will be built. Administrative facilities are also located on this side. The stage I contract is for the outlet works, including intake structures and drilling of the upstream portion of the six 25-foot tunnels which will serve for diversion during the later construction stages. After closure, they will regulate the release of water from the huge reservoir. The powerhouse will be built on the east side under a future contract.

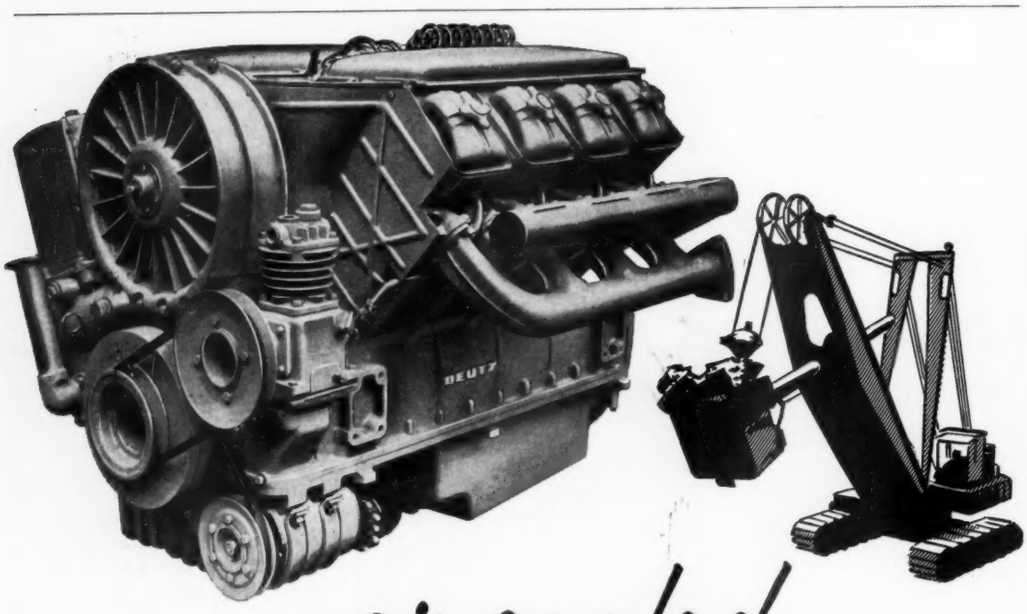
Personnel

Since Oahe Dam is located only about six miles from Pierre, it was not necessary to build a town at the dam site. In the early construction stages, the U. S. Army Corps of Engineers used vacant buildings at Pierre airport for office, laboratory, and housing for its staff. Last year an office building was erected at the dam site. A group of 50 homes was constructed in Pierre in 1950, and these provide living quarters for construction personnel. When the dam goes into operation, the homes will be used by the permanent operating staff.

The area engineer in charge of the project for the U. S. Army Corps of Engineers, Oahe Area, is John W. Sibert, Jr., and assistant engineer is L. G. Leavitt. Lee Crist was resident engineer on the stage III earthwork contract, and Earl Garrett served as his assistant.

Supervising the project for Lytle & Green was Boyd McMillan, project superintendent. He was assisted by Ralph D. Stewart, engineer; Vernon Williford, field superintendent; and Bill Wallace and Charles Forman, shift superintendents. These men were instrumental in carrying out an effective safety program. As of August 24, 1954, these crews had worked 370 days without a lost-time accident.

THE END



here's the *air cooled* answer

to "OVER HEATING" problems!

AIR COOLED DEUTZ DIESELS

DESIGNED FOR HOTTER, CLEANER RUNNING
WORK CONTINUOUSLY IN 140° WEATHER
ELIMINATES WATER

Engines for "stationary" use that never have cooling-heating problems — with higher fuel efficiency — and simpler design for maintenance ease and economy . . . the construction industry finds *all* these advantages in the Deutz Air Cooled Diesels.

Built in horsepower ratings from 5 to 250, and in 1, 2, 3, 4, 6, 8 and 12 cylinder models, Deutz Air Cooled Diesels start easier, and warm up faster. They are designed for higher operating temperatures than liquid-cooled units, and the higher temperature-compression levels mean greater fuel efficiency. The hotter combustion conditions likewise end corrosion danger from the sulphur content of most Diesel fuels — preventing the condensation of sulphurous acid within the cylinder.

Deutz engines are turning in impressive performance records in hoist, pump, generating, and such stationary uses; on tractors, shovels, and other mobile equipment, and in heavy duty trucks and buses.

Deutz Air Cooled Diesels are built in West Germany by the world's largest and oldest builders. They are available *now* in your area. For name of your nearest representative, or for more information on Deutz Diesels, please write or wire:

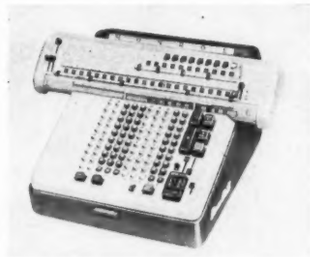
DEUTZ

DIESEL ENERGY CORPORATION
82 BEAVER STREET, NEW YORK 5, N. Y.

New calculator handles work of average business

■ Another fully automatic calculator, the 6-N, has been announced by Monroe Calculating Machine Co., Inc., Orange, N. J. This model is designed to handle economically the volume of work of the average business.

The design of the 6-N includes a new color scheme which relates color of control bars to their function, a special aid to the unskilled operator. The unit also offers the simplicity of



a single keyboard for entry of all factors, and zeros come up automatically. Other features include automatic keyboard control; simplified dial locks; automatic multiplication, division, tabulation, and squaring; multiplication with constant; accumulative multiplication; multiplier non-entry control; automatic non-repeat control; and split lower dials.

The 6-N is available in two models: the 6N-162 with an 8-column keyboard, 8 upper dials, and 16 lower dials; and the 6N-212 with a 10-column keyboard, 11 upper dials, and 21 lower dials.

For further information write to the company, or use the Request Card at page 18. Circle No. 127.

1-yd. MICHIGAN takes a heaping bucket-load . . .

The bonus in the bucket pays for this machine fast!

Take another look at the bucket in the photograph. It shows a typical MICHIGAN* bucket-load, heaped-up well over the rated capacity of the bucket—nearly a 50% bonus. Translate this bonus into your daily production and you'll see why a MICHIGAN Tractor Shovel pays for itself fast: you simply move more material with a MICHIGAN.

Tremendous digging ability. Get the bucket blade into hard-to-dig material or under a heavy obstacle and "work" the bucket until you've got a heaping load. The two double acting bucket cylinders are actually powerful enough (if the blade is under an immovable object) to pull the back wheels off the ground! We'll match the MICHIGAN'S digging ability against any make or type of Tractor Shovel, bar none.

Low-level bucket action. You can roll the bucket back only a few inches off the ground—heaping bucket-loads even when the material is scattered only a few inches high. And you can carry the full load *low*—your driver can *see* where he's going, he doesn't have to travel *backwards*.

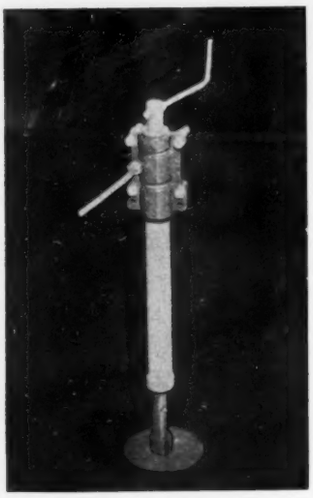
No clutch—faster cycles. There's no clutch pedal on a MICHIGAN. You can actually shift between Forward and Reverse *while moving:* simply push the hand-lever on the steering column—MICHIGAN'S power-shift transmission shifts instantly. Power-shifting saves time and energy every cycle. Your operators will say: "This sure beats riding a heavy-duty clutch all day!"

See it in action—on your own job. Write us and we'll arrange a demonstration. MICHIGANS are built to handle jobs too tough for other rubber-tired Tractor Shovels—*let us prove it,* without obligation. Write for details on the pay-as-you-go MICHIGAN Lease Plan—you can put these machines to work without laying out a penny of capital.

CLARK EQUIPMENT COMPANY
Construction Machinery Division
384 Second Street
Benton Harbor 27, Michigan
Phone WA 6-6184

CLARK EQUIPMENT

*A Trademark of Clark Equipment Company



The new Knight jack-stand clamps to the drawbar of heavy equipment to lift it up to 5 inches.

Jack-stand fits drawbar to lift heavy equipment

■ A jack-stand rated to lift up to 2 tons is designed to fit the drawbar of most construction machinery. The unit stands 27 inches high on a 6-inch-round steel base plate.

With the jack-stand clamped to the framework or drawbar of the equipment, the lifting cylinder is allowed to drop to the ground. After a ductile iron clamp is locked in place against the cylinder, a hand crank is turned to lift equipment as high as 5 inches with little effort.

For further information write to Knight Mfg. Co., Brodhead, Wis., or use the Request Card at page 18. Circle No. 27.

Revised bulletins on power shovels and cranes

■ Revised bulletins covering the Lima Type 34 and 44 power shovels, cranes, draglines, and pull shovels are available from Baldwin-Lima-Hamilton Corp., Lima, Ohio.

The Type 34 is a ¾-yard shovel and 20-ton crane, while the Type 44 is a 1-yard shovel and 25-ton crane. Both are offered on either crawler or wheel mountings.

To obtain this literature write to the company or use the Request Card that is bound in at page 18. Circle No. 60.

Thomas industries buys Wright Power Saw & Tool

Thomas Industries, Inc., Fort Atkinson, Wis., has purchased the Wright Power Saw & Tool Corp., Stratford, Conn., manufacturer of Wright pneumatic saws. The Wright company, which will be operated as a wholly owned subsidiary of Thomas Industries, is being moved to Sheboygan, Wis., where its manufacturing facilities will be expanded.

The Wright company was founded in 1950 by John Winthrop Wright and J. H. Whitney & Co., New York, N. Y. Mr. Wright will continue to be associated with the Wright company and Thomas Industries.

Case history

Two extra surge bins boost plant efficiency

By tripling the surge-bin capacity on a Pioneer 46VE Duplex crushing plant to meet special field conditions, a California contractor has substantially increased the efficiency of his crushing and hauling operation. As a result, the Pioneer plant works at capacity under conditions which normally reduce production.

A splitter device for feeding either or all of three Pioneer 25-yard surge bins can be credited for making the efficiency change. The extra surge capacity from the two additional bins has been sufficient to carry the big plant's production for critical minutes when trucks are not available to haul from under the plant.

The idea currently is chopping costs for Fredericksen & Kasler, Sacramento contracting firm, on a $4,100,000 air-base construction job near Merced, Calif. Approximately 330,000 tons of material are being crushed by the 46VE Duplex plant for the job.

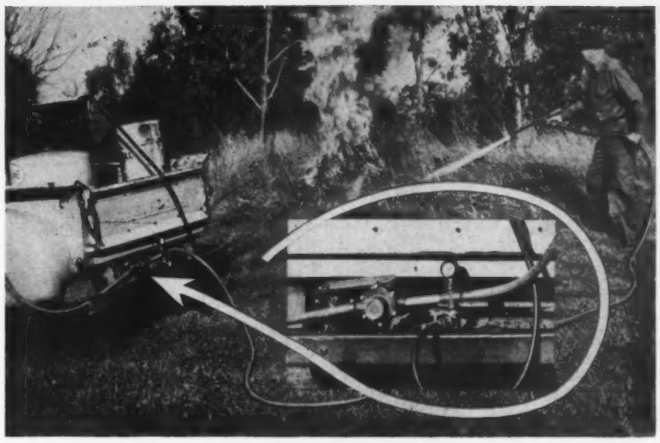
Besides the increase in production efficiency, the plant setup enabled 40-ton semitrailers to pick up their loads for the haul without undue maneuvering at the bins. Helped along by a Pioneer 4309 triple-roll crusher unit, the plant has been able to turn out 480 tons per hour—which volume

This Pioneer 46VE Duplex crushing plant with triple surge-bin capacity is doing a highly efficient and economical job for Fredrickson & Kasler, Sacramento, Calif., contractor, on an air-base project near Merced, Calif. The plant continues capacity operation even where trucks are not available for the haul.

is easily handled by the trucks and trailers hauling from the triple-bin arrangement.

Like most practicable methods of efficiency and economy, this plant modification was relatively simple. The two extra bins were set in place side by side with the regular plant equipment. The stacker conveyor was centered over the three-bin setup, with the stacker feed dropping off to the splitter device—hardfaced inside to prevent excessive wear. A three-way splitter gate inside this chute made it possible to feed any combination of the three bins.

As all contractors know, modern heavy-duty portable rock plants like the 46VE Duplex are capable of excellent sustained production, limited only by the ability of hauling equipment to meet changing field conditions. Too often when trucks bunch up, especially under circumstances over which there is little control, plant output suffers. The triple-bin surge capacity arrangement on this plant is virtually a foolproof answer to the problem, this contractor feels.



A new rotary pump is the first of a series of tools designed to increase the usefulness of the Watson rear power takeoff for light trucks.

Rotary pump designed for truck power takeoff

■ Earlier this year the H. S. Watson Co. announced production of a rear power takeoff designed to tap the engine power of light trucks and pickups for utility work. To further increase the usefulness of the handy power source, the company now offers a rotary pump that can be installed easily.

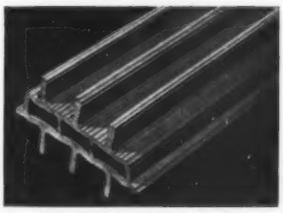
Developing pressures up to 350 pounds, the pump is designed to handle spray chemicals, petroleum products, and water. Features include corrosion-resistant construction, permanently lubricated ball-bearings, nylon rollers, and a safety shear-pin coupling. The pump can also be used on tractors having a 1⅜-inch six-spline power takeoff.

The company states that it plans to produce a broad line of other tools for use with the rear power source.

For further information write to H. S. Watson Co., 1316 67th St., Emeryville, Calif., or use the Request Card at page 18. Circle No. 100.

Cellular waterstop

■ The new 3-rib plastic cellular waterstop recently introduced by Water Seals, Inc., 9 S. Clinton St., Chicago 6, Ill., keeps joints watertight in spite of differential movement or separation. Three cells built into the waterstop compensate for both vertical and horizontal joint separation.



The cellular waterstop is extruded from flexible long-lasting vinyl plastic. It requires no form splitting and is readily spliced in the field with a heated knife or soldering iron.

The waterstop, 4½ inches wide and 2¼ inches deep with cells ½-inch deep, comes in 25-foot lengths. It weighs about 2 pounds per linear foot.

For further information write to the company, or use the Request Card at page 18. Circle No. 5.

ADC* Oilprint Analysis

CHECKS CRANKCASE OIL IN MINUTES

Shell Research gives you new oil-change yardstick—

Now—operators can test crankcase oil in the short time allotted for refueling and crankcase oil checks. The Shell ADC Oilprint Analysis gives a practical and accurate oil evaluation in minutes.

ADC Oilprint Analysis means big savings when used in your preventive maintenance program . . . gives valuable information on engine and oil conditions. It answers the question "When do I change my oil?" thus eliminating the draining of usable oil and the risk of using oils loaded with contaminants.

See for yourself how the new Shell ADC Oilprint Analysis can save you money in preventive maintenance. Let us show how you can use this new service for your equipment.

SAVES... Time, Money, Engines, Oil

*Trademark

SHELL OIL COMPANY,
50 WEST 50TH STREET, NEW YORK 20, NEW YORK
100 BUSH STREET, SAN FRANCISCO 6, CALIFORNIA

SHELL

A self-propelled Clipper concrete saw, one of the most commonly used machines in Kansas, uses a diamond-edge blade to cut a transverse joint.

MACHINERY

Abrasive blades halve cost of sawing pavement joints

Accompanying the reduced cost of sawing highway joints—a development made possible by improved methods and equipment—has been a continuous improvement in the quality and smoothness of concrete paving done in Kansas.

The sawing of 1¼-inch-deep transverse contraction joints is specified at 30-foot intervals by the state highway commission, and though longitudinal strips may be sawed or formed with steel center strips, contractors now prefer the sawing method. Specifications call for joint sawing at 90 to 120-foot intervals to avoid premature cracking.

The standard design for rural pavements is a uniform 9-inch-thick slab, reinforced with 44 pounds of welded wire fabric per 100 square feet. This reinforcing is placed 2½ inches from the surface. A steel longitudinal center strip with ½-inch round tie bars 3 feet long spaced about 30 inches is included in the design.

Concrete saws were first used on Kansas highways by maintenance forces for patching pavement, and the success of this work led to sawing being tried on a 1949 paving job. These experiments showed that sawing with blades then available was difficult and unsatisfactory if done before concrete was 20 to 24 hours old. But under certain weather conditions, irregular transverse contraction joints formed at about 80 to 100-foot intervals if sawing was delayed that length of time.

Starting in 1950, all contraction joints were sawed. Specifications prohibited the use of liquid membrane curing compound and called for the older method of earth curing to be used. On urban pavements contractors were permitted to use cotton mats or three thicknesses of burlap. Contraction joints were to be formed in the usual manner at 80-foot intervals as the pavement was being placed. The intermediate contraction joints at 20 feet were then sawed at the end of the curing period.

In 1952 all expansion joints were eliminated, excepting those at bridge approaches. Specifications required four expansion joints within the first 90 feet from the end of each bridge, and an additional joint about 600 feet from the end of the bridge.

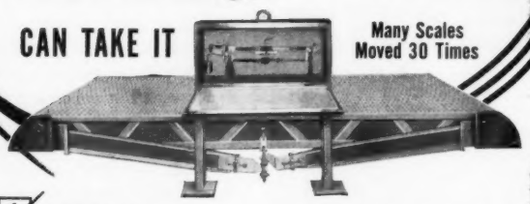
Spacing of contraction joints was increased to 30 feet in 1953, and all of them were required to be sawed.

Here's Why

THURMAN Portable SCALES

CAN TAKE IT

Many Scales Moved 30 Times



☑ **PORTABLE** Move Thurman Portable Heavy-Duty Truck Scales as a unit, — they're engineered to be transported from job to job and retain their weighing accuracy. Concrete pits are not required. Place the end stands on solid, firm ground — "ramp-up" at both ends with stone or dirt and you're ready to weigh.

☑ **RUGGED** These precision-built heavy-duty Portable Truck Scales weigh accurately and are built to "take-it". Hundreds of Thurman Scales have been moved to over 30 different locations during a period of several years. Rugged service like this, illustrates how well these scales are designed for portable weighing.

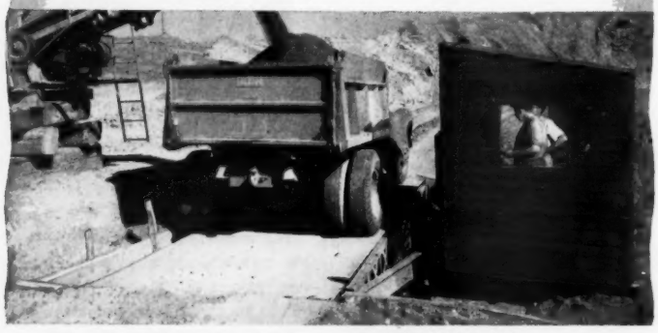
☑ **PROVEN** Many contractors and road builders throughout the country who have used Thurman Portable Scales, like them to the extent that they now have several Thurman Scales in constant use. For more complete information on deck length (18 — 43 ft.) and load capacities (20 — 50 tons), write for our folder: "Accurate . . . Portable Weighing".

the THURMAN MACHINE COMPANY

PRECISION PRODUCTS since 1918

Scale Division

DEPT. A, 156 NORTH FIFTH STREET • COLUMBUS, OHIO



Other Precision Scales by **THURMAN**

Batching Electronic | Industrial Liquid Weighing | Pipe Lever-Hopper Pit Scales | Warehouse Wheelbarrow

The preferred BABBITT tape for highway, railroad and other heavy duty measuring

LUFKIN

Michigan Chain Tapes

Where the going's rough and accuracy is a must, Lufkin Michigan Chain Tapes will give long, dependable service.

Deeply stamped markings on babbitt metal pads stay easy-to-read.

The extra-tough, tinned steel line resists rust, wear, abrasion and kinking. Also available with the famous Chrome Clad finish for extra long service. Line has sturdy, formed end-ring with reinforcing strips and is easily removed from frame. Available marked in Feet, Links or Meters.

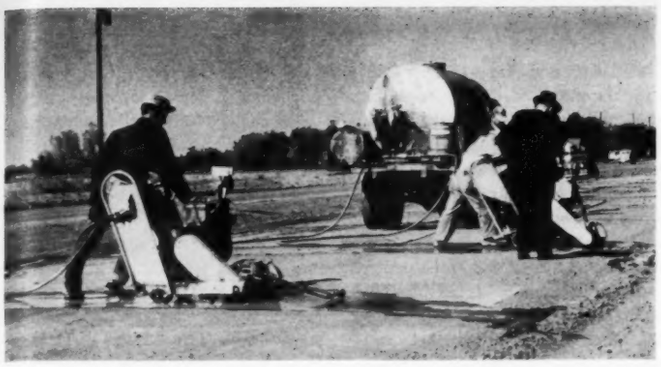
Strong steel frame has extra long winding handle. Four arm frame with "D" handle is used on tapes over 100 feet long. Large drum for fast winding.

BUY LUFKIN TAPES • RULES • PRECISION TOOLS FROM YOUR SUPPLY HOUSE

THE LUFKIN RULE CO., Saginaw, Michigan

132-139 Lafayette St., New York City • Barrie, Ont.

365



Clipper saws do their toughest work on U. S. 69 in southeastern Kansas, where chat aggregates are used in the concrete.

After the longitudinal joint is sawed and cleaned out, a Graco pump forces Presstite 77 joint sealer from the drum into the narrow slot.

New low-cost blades, capable of cutting green concrete, saw footages equal to those made by diamond-edged blades

By the end of the season, several types of abrasive blades were being tried, and some contractors were using them on 12-hour-old concrete. Last season, the required depth of cut was reduced to 1¼ inches and virtually all contractors abandoned the diamond-edged blades in favor of other types.

The customary procedure now is for the contractor to lay the burlap back at the location where joints are to be sawed when the concrete is 8 to 12 hours old. These joints may be cleaned with water and air and sealed immediately, or sealing may be delayed until longitudinal joints have been cut. The latter are usually sawed after the burlap has been removed and before earth curing material is placed. Though contractors use modifications of this procedure, all joints are sawed within 8 to 16 hours. Joints are then cleaned, filled, and covered with a 2-inch strip of paper before earth curing material is applied.

All saws used on Kansas highway work have been the portable single-blade one-man units powered by 12 to 24-hp gasoline engines. These are mounted on three or four-wheel carriages and have belt connections from the engines to the saw spindles. Unlike earlier saws—which had to be pushed and required tracks for straight operation—the newer models, like the Clipper ConSawMatic, are self-propelled and have a planetary gear to provide variable forward speeds.

The newer units also permit an experienced operator to cut a straight joint using only a chalk line as a guide. This is important since side sway causes the blade to rub against the sides of the cut, decreasing the life of the blade. A water tank truck is needed as auxiliary equipment since cool water spraying on the blade gives it a longer life. Depending on the types of aggregates used and the depth of the cut, machines will saw up to 15 linear feet per minute. A

(Continued on next page)

"...Our Radio System Paid for itself on this one Job Alone!"

—Says Al Lizza, President, Lizza & Sons, Inc. Contractors for Garden State Parkway

Trucks operating on parkway construction are under radio control at all times.

"With our operations extending over 22 miles of the Garden State Parkway, I can pick up the mike and talk to any man on the job. If any of the rigs break down, we get a service truck out on the road in a few minutes. Operations at the plant can be quickly adjusted, too, so that our fleet of hot-mix doesn't pile up at the 'down' machine."

Lizza & Sons has mobile units in the superintendent's car, master mechanic's and foremen's trucks, and other units on the lube trucks, two of the graders and five of the pickups. A control station at the asphalt plant keeps a dispatcher in touch with trucks at all times. Radio has earned hundreds of dollars a month in time saved by quick intercommunication between personnel. *"It's likely our radio system paid for itself on this one job," adds Mr. Lizza.*

Savings on the job mean increased profits. You'll find out, too, that actually radio costs you very little because it's *self-amortizing.*

(Top) Al Lizza at mike in field office talks to service trucks on road; and (above) Wally Slauson, Superintendent, trouble shoots operations from his car.

GET THE BEST—GET RCA 2-WAY RADIO! Quality that only the leader in radio and electronics can offer gives assurance of top performance under the most gruelling conditions. Simplest maintenance and operating requirements. The RCA Service Company provides installation and service to keep your equipment operating at its best.

MAIL COUPON FOR MORE INFORMATION

Radio Corporation of America
Communications Equipment, Dept. 5-277, Building 15-1, Camden, N.J.

☐ Send information on RCA 2-Way Radio for Construction.
☐ Have RCA representative call on me.

NAME_____ TITLE_____

COMPANY_____

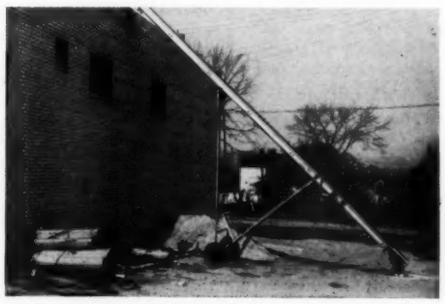
ADDRESS_____

CITY_____ ZONE____ STATE_____

RADIO CORPORATION of AMERICA
COMMUNICATIONS EQUIPMENT CAMDEN, N.J.

—CONVEYORS—
—ALUMINUM FRAMES—
BRICK – TILE – CONCRETE

SALES



SERVICE

– LIGHTWEIGHT – RIGID –
GASOLINE, AIR, OR ELECTRIC DRIVE
Write for Bulletins—B.C., F.T., or S.M.

FARNCO SALES CO.
Emerson 2-3614
6715 Formosa Way Pittsburgh 8, Pa.

(*Continued from preceding page*)

speed of 6 to 8 feet per minute seems the most economical for the abrasive blades.

Types of saw blades

Until the end of the 1953 season, the only blades used were the diamond-edged blades which make a cut about ⅛-inch wide. These blades consist of a high-grade steel disk, slotted around the edge for cooling purposes. The cutting edge has about a ¼-inch band of commercial diamonds bonded to the steel. These blades, operating at about 3,000 rpm, have been found most economical for cutting concrete more than 24 hours old, but are not as economical or satisfactory for cutting green concrete. Of the 12 and 18-inch sizes available, the 12-inch is the more popular with contractors.

Abrasive blades, used almost exclusively during the 1954 season, are composed of silicon carbide in a plastic matrix reinforced with either nylon, steel mesh, or Fiberglas mesh. Approximately ⅛-inch thick, they make a wider groove than the diamond blades. Clipper, Target, and Carboflex blades were most commonly used, and the 14-inch-diameter size was most popular.

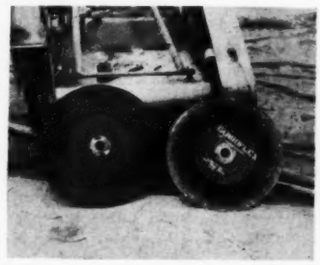
The 12-inch diamond-edged blades cost about $160 each. Abrasive blades sold last year from $6.50 to $16.50 each. Work done to date indicates that abrasive blades, which produce at least as much footage of joint as the more expensive diamond blades, have the added advantage in that they can be used for early sawing.

Sawing cost comparison

Until abrasive blades became available, the major cost of sawing joints was the cost of the blades. But with the cheaper abrasive blades, this cost is becoming a smaller portion of the total. The two greatest variables now affecting sawing cost are the type of aggregate used in the concrete and the type of blade. The three general concrete aggregate types used in Kansas in the order of ease of sawing are: combinations of crushed limestone and sand; sand-gravel mixes; and chat from the Missouri-Kansas-Oklahoma area.

Cost information on diamond-edged blades for 2-inch-deep cuts naturally vary from job to job because of variable factors. But a fair average cost per linear foot is 5 cents for limestone-sand mixes, 16½ cents for sand-gravel mixes, and 30 cents for chat mixes. Labor costs appear to be about 5 cents for the limestone-sand mixes and ten cents for the other two types. Sealing costs, about 3 cents per linear foot for all types, bring total linear-foot costs to 13 cents for limestone-sand mixes, 29½ cents for sand-gravel mixes, and 43 cents for chat mixes.

The 1954 sawing costs with the new type abrasive blades in green concrete seem unbelievably low in comparison. Contractors report that abrasive blades will cut up to 5,000 feet in the limestone-sand mixes, up to 1,000 feet in sand-gravel mixes, and 200 feet in chat. These footages are for 1¼ and 1½-inch depths. The blade cost per linear foot of sawing is about $0.005 for limestone-sand mixes, $0.01 to $0.03 for sand-gravel aggregates, and 8 cents to ten cents for chat mixes. The labor cost was reported to be about 2 to 3, 4 to 5, and 5 to 10 cents for the three types of aggregates, respectively. Sealing costs remained practically the same for the joints sawed with the diamond-edged blades.



The difficulty of sawing concrete using chat aggregates shows up when a new Carboflex abrasive blade is set beside one which has cut a 1¼-inch-deep joint in 24 feet of green concrete.

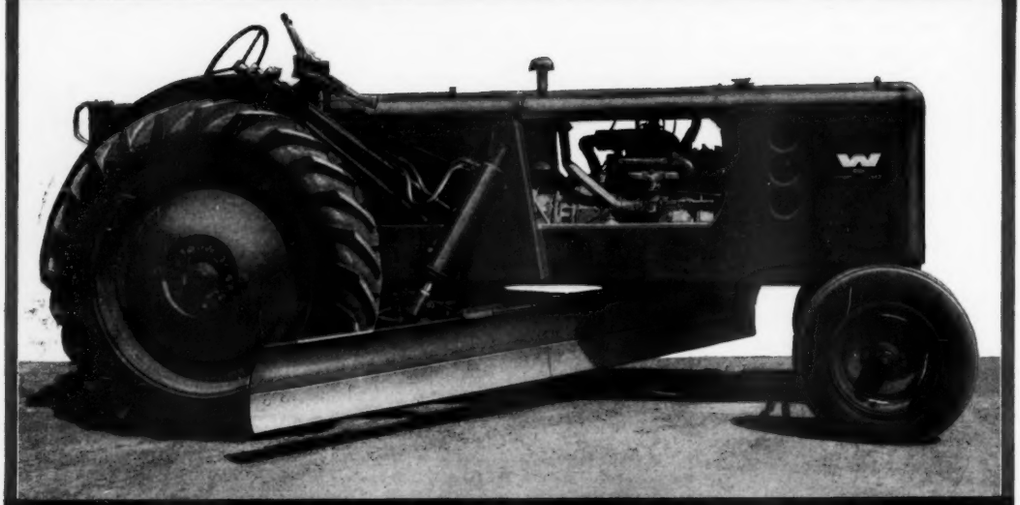
Thus the total linear-foot cost for sawing and sealing joints in limestone-sand aggregates, sand-gravel mixes, and chat is, respectively, 6, 8 to 11, and 16 to 23 cents. The square-yard cost, based on the 30-foot spacing for contraction joints and 24-foot-wide rural pavement, is about 4, 6½, and 13 cents for the three types of mixes, respectively. This is less than half the cost of sawing 2-inch-deep joints in older concrete with diamond-edged blades.

Sealing joints

Kansas, which specified only rubber-asphalt types of joint filler for a number of years, now gives contractors the choice of using either the hot or cold-poured type. Since the hot-poured type requires a clean and dry joint, and the cold-poured compound needs a clean joint which is surface-dry, most contractors use the latter. Presstite 77 is most frequently used.

Sealing material is pumped from barrels into the joint through a thin flat nozzle which reaches the bottom of the cut. Recently developed pumps for handling high-viscosity materials are proving satisfactory for this work,

NEW HUBER-WARCO MAINTAINER



NOW WITH TORQUE CONVERTER

The newly designed Huber-Warco Maintainer, with torque converter, is truly a versatile machine. Construction and highway maintenance problems are handled quickly and efficiently with the Maintainer.

This sensational performer will out-perform many machines that are larger, heavier, more costly, slower, more expensive to operate, and more limited in use.

With hydraulically controlled attachments, the Huber-Warco Maintainer will perform service as a bulldozer, lift-loader, side dozer, berm leveler, broom, patch roller, mower or snow plow.

See A Demonstration of These Important Features

- 45½ H.P. — with plenty of reserve strength for the toughest jobs.
- Torque Converter — reduces shock loads — prolongs the life of the machine. Picks up and carries loads smoother and faster.

Automatically adjusts vehicle speed to meet varying load conditions.

Engine won't stall — regardless of grade.

- All controls within easy reach of the operator.
- Weight of 6250 lbs. — 7205 lbs. with calcium chloride in tires. Enough weight for all maintenance jobs.
- Working speeds range from 1.7 to 8 m.p.h. Travel speed is 21 m.p.h. for quick movement from job to job.
- 9′ Power Sliding Moldboard is standard.
- Hydraulic controls govern movement of the blade and all attachments.

SEE YOUR NEAREST HUBER-WARCO DISTRIBUTOR

HUBER W WARCO

HUBER-WARCO COMPANY

MARION, OHIO, U. S. A.

Road Machinery

CABLE ADDRESS: HUBARCO

ROAD ROLLERS • MOTOR GRADERS • MAINTAINERS • GRINDERS

H. O. Reed, engineer of construction, Kansas State Highway Commission, at his Topeka headquarters.
C&E Staff Photo

and the Graco pump is the one most widely used by Kansas contractors.

Probably the greatest advantage of sawing lies in the quality of the concrete at the joint, where less spalling and deterioration of the pavement has been noticeable. The difference in the amount of spalling and breaking is easily seen on pavements having formed joints at 80 to 120 feet and sawed intermediate joints.

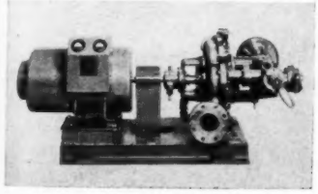
The smaller cross-sectional area of the sawed joint also permits less water to infiltrate, so that there is less likelihood of pumping and the formation of corner breaks. And since no bumps or depressions are built into the pavement by joint construction operations, the resulting pavement is smoother. With the use of the narrow sawed joints, the rhythmic thump of evenly spaced contraction joints is hardly noticeable.

Roughometer tests indicate less total displacement per mile for pavements with sawed joints. But so many other factors influence the smoothness of older pavements that it has not been possible to obtain roughometer readings which permit the two types to be fairly and accurately compared. THE END

From a paper by H. O. Reed, engineer of construction, Kansas State Highway Commission, which was presented at the last annual meeting of the American Association of State Highway Officials.

New generating sets powered by steam turbines

■ A line of ac single-phase and 3-phase turbo generator sets for emergency lighting or continuous service has been announced by Coppus Engineering Corp., 341 Park Ave., Worcester, Mass. Marketed ready for installation, the sets are available in ratings from 3.75 to 62.5 kva.



The units consist of a Coppus Type TF steam turbine with a constant speed governor, a safety trip to prevent excess speed, carbon ring glands, and a Sentinel relief valve and steam strainer. The turbine is connected by a Falk flexible coupling to an 1,800 rpm generator.

For further information write to the company, or use the Request Card at page 18. Circle No. 13.

Thirteen new models added to six-wheel truck line

■ Thirteen new International six-wheel trucks with gvw ratings from 33,000 to 41,000 pounds, have been introduced by International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill. These additions, which include models of both conventional and cab-over-engine design, bring to 92 the number of tandem-drive units offered by Harvester.

The new models include the RF-178, rated at 33,000 pounds, four Series RF-200 trucks ranging from 37,000 to 41,000 pounds; four cab-over-engine COF-190 models from 30,000 to 35,000 pounds; and four Series COF-200 six-wheelers with ratings from 37,000 to 41,000 pounds. The RF-200, COF-190, and COF-200 series each include a Roadliner tractor model with a gross combination weight rating of 65,000, 55,000, and 65,000 pounds respectively.

Model RF-178 features a new 7,000-pound front axle and 28,000-pound rear bogie. Power is provided by the International Black Diamond 308 engine, which develops 145 horsepower. Wheelbases are 142, 154, 172, and 190 inches.

The International Red Diamond 406 engine, rated at 175 horsepower, is standard for Series RF-200 six-wheelers. The Royal Red Diamond 501 is provided as optional equipment for highway application. Equipment includes a 9,000-pound front axle and 34,000-pound rear bogie. Wheelbases of 145, 157, 175, 193, and 211 inches are available. Eight new six-wheelers are of COE design. The standard power plant for these models is the Red Diamond 406 engine. Wheelbases are 129, 147, and 165 inches.

Full power steering is standard on all COE six-wheelers. Also standard is a 9,000-pound front axle and 60-gallon tank. Model COF-190 trucks are offered with either a 28,000 or 34,000-pound rear bogie. A 34,000-pound bogie is standard on Series COF-200 units.

All International six-wheel-trucks feature a third differential and power divider that allows each wheel to rotate independently, distributing power equally to all driving wheels.

For further information write to the company, or use the Request Card at page 18. Circle No. 80.

ENGINEERED ESPECIALLY FOR TOUGH CONSTRUCTION DUTIES

performs on-the-job handling - faster - better - easier!

This new Prime-Mover built specifically for construction work provides practical answers to building contractors problems.

FOR EXAMPLE:

1 Length of only 64 inches and 31½ inch width permit easy maneuverability where more cumbersome equipment cannot go.

2 Compact size allows operation over the same ramps, runways, hoists and towers commonly used.

3 Positive controls let even the inexperienced laborer operate the unit safely and efficiently.

4 Interchangeable bucket and flatbed increases cost-saving usefulness.

5 Dependable engine and proved transmission insure continuous service.

6 Recoil starter, large fuel tank, sealed-in lubrication, natural position steering bars, are added improvements.

These features and improvements mean a Prime-Mover that gives you ready-to-go power for handling any material — anywhere on the job. Prime-Mover distributors are ready to demonstrate. See yours or write us

A Prime-Mover will place 12 to 17 cubic yards of concrete per hour. 10 cubic feet per trip.

A Prime-Mover will haul up to 300 bricks direct from yard to bricklayer. 1500 lbs. per trip, up 20% grades.

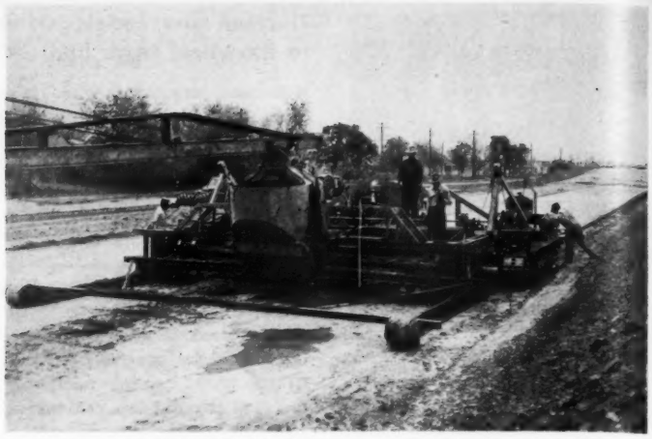
PRIME-MOVER

THE PRIME-MOVER CO., MUSCATINE, IOWA

MACHINERY

Slip-form rig combines concrete-finishing tasks

Machine requires smaller crew, no stationary forms in paving highway base course



The finisher works with a paver to lay a concrete base for the Eastex Freeway, part of the Houston expressway in Texas. *C&E Staff Photos*

A single machine which does all pavement-finishing operations and eliminates the need for stationary forms may be the next major piece of equipment to reduce concrete-pavement costs.

In a demonstration run, such a contractor-built finisher recently laid and finished a sand-shell concrete base course on a Houston, Texas, expressway as fast as a Koehring 34-E Twinbatch paver could produce the mix. While this was a base course, and specifications permitted a maximum of ½-inch variation in 10 feet, actual straightedging of the finished surface showed irregularities were actually less than ¼ inch in 10 feet.

The trial run of the finisher convinced the contractor and others who saw the operation that this single machine can satisfactorily produce the same results as the two to five machines in the normal finishing train. At the same time, it completely eliminates form-setting and removal operations and substantially reduces the number of workmen required.

The Eastex Freeway, where the test run was made, is a section of the rapidly growing Houston expressway system. Located on U. S. 59 in the northeastern part of the city, this project included four bridges, drainage, grading, base, and pavement on a 1.5-mile stretch. A typical section of the new freeway includes two three-lane pavements, which are separated by a 20-foot planted median and flanked on both sides by service roads. F & C Engineering Co., Houston, is doing the work under a $1,325,000 contract with the Texas State Highway Department.

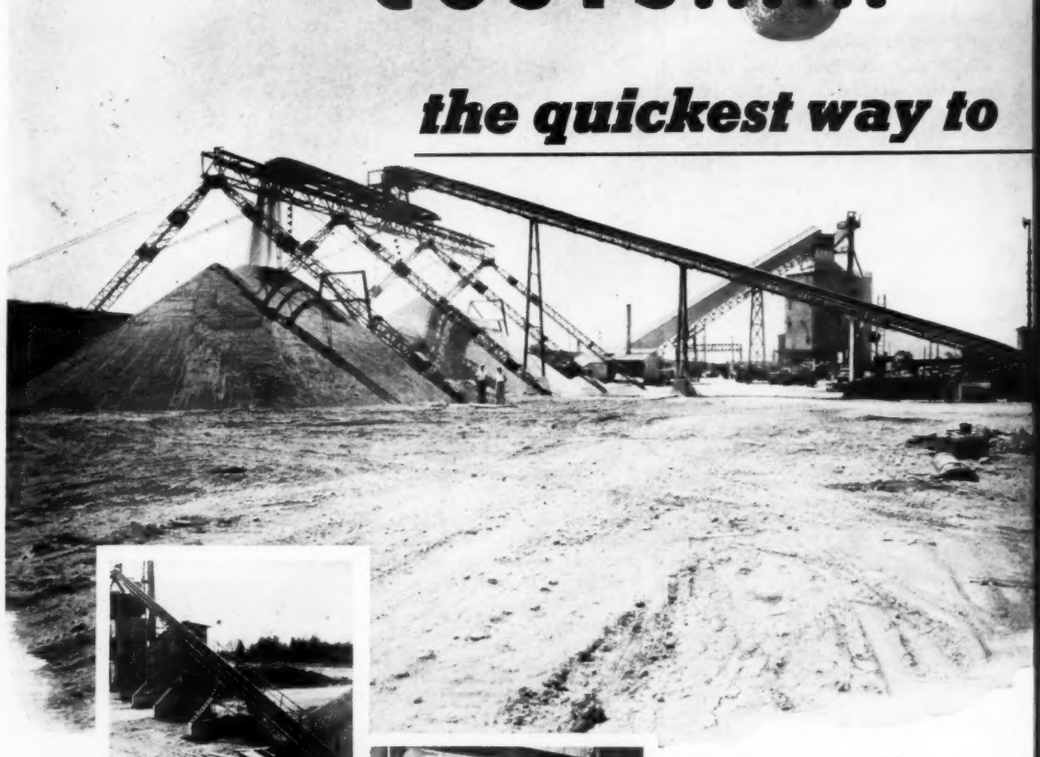
Forms slide on base

Mounted on a 40-foot section of standard paving form, the slip-form finishing machine has the basic elements of spreader, vibrator, and transverse finisher. It is adjustable for standard paving widths from about 20 to 26 feet. Four 10-foot sections of paving form are securely fastened together to form the slip-form runners for each side. Light structural-steel cross members hold the forms at the proper spacing and keep them in alignment. A shoe attached to the lead end of each form

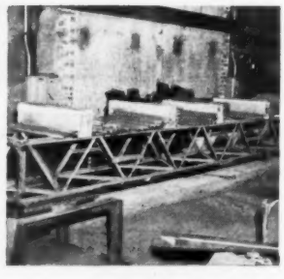
(*Continued on next page—Col. 4*)

REDUCE HANDLING COSTS.....

the quickest way to



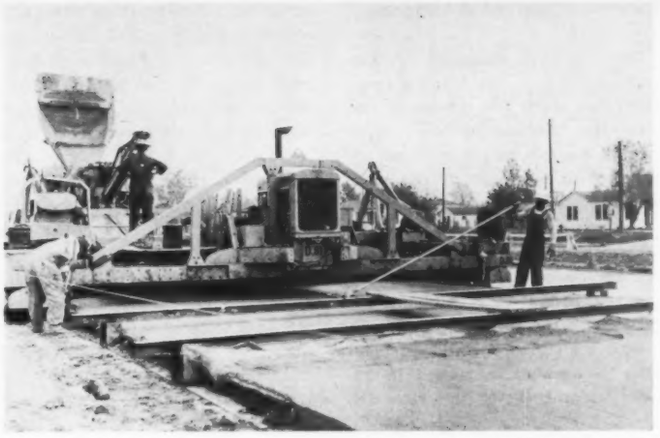
HELTZEL-OHIO INCLINED AND SHUTTLE CONVEYERS make the handling of vast amounts of materials fast and economical. Before you buy any equipment let Heltzel-Ohio specialists look over your operation and estimate a complete modern day system.



GREATER STRENGTH for LONGER LIFE is the story behind Heltzel-Ohio's special A-frame. Fully stress relieved, most parts are fabricated at the factory under ideal conditions. Unitized, it sets up fast—will last longer.

Thoroughly proved under "back-breaking" loads, every Heltzel-Ohio conveyer section must pass rigid weight tests far in excess of anything it will ever have to carry in the field.

A pair of crawler tracks, mounted outside the paving forms, support and propel the new slip-form rig.



Any ridges left by the machine are taken out by a workman with a long-handled float. The Koehring paver is working dead center, just ahead of the finisher.

(Continued from preceding page)

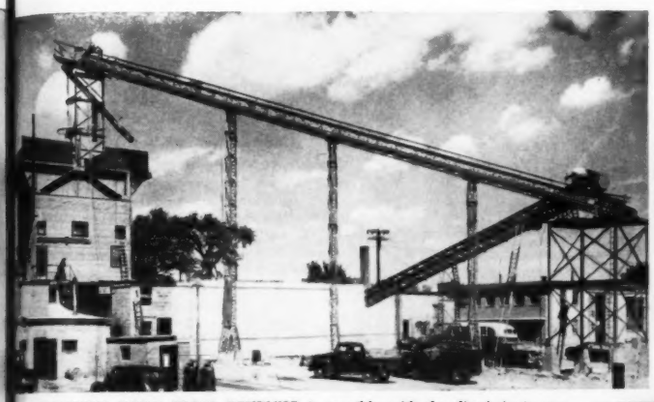
has a roller which rolls on the ground to keep the moving form from digging into the subgrade. The first 10 feet of form simply fills in between the paver and the first finishing operations to keep the concrete from spilling out beyond the forms.

Finishing operations are concentrated on the center sections of the form. First a conventional auger spreads the concrete uniformly between the forms. Immediately behind the spreader is an electrically powered Jackson tube vibrator. Twin oscillating screeds finish the slab in the same manner as a conventional finisher. One man with a long float rides a platform at the rear of the machine, taking out any irregularities left by the screeds. A burlap drag attached to the last cross-brace applies the final finish. Provision has been made on the rear of the machine to mount an attachment for forming joints if this is required.

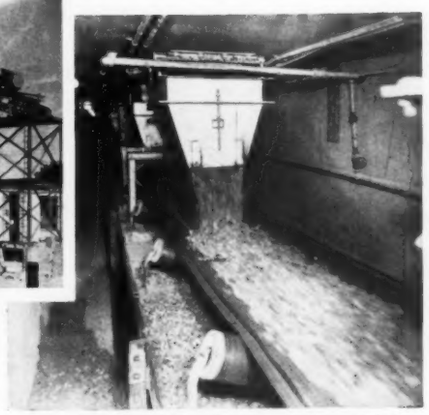
The operating and propelling mechanism is carried on a main framework near the middle of the machine. A Waukesha engine, mounted on this main frame, propels the machine by driving a pair of tracks mounted outside the paving forms. This engine also operates the spreader and finisher. An auxiliary Wisconsin engine drives the generator which provides power for the vibrator. This engine also drives the hydraulic pump which powers the controls for the entire machine. Hydraulic controls permit the weight of the machine to be distributed entirely on the tracks. The forms carry only the weight of the two screeds.

On the expressway base job, the materials were dry-batched from the commercial plant of Parker Brothers & Co., Houston, and delivered to the paver in hired trucks hauling three batches each. Water from the municipal system was delivered to the paver by two Ford 1,500-gallon tank trucks. The materials were mixed in a Koehring 34-E Twinbatch paver which traveled on the base ahead of the finishing machine. This much of the operation was similar to a normal paving job, except that there were no forms in the way of the paver or the batch trucks.

(Continued on next page)



ECONOMICAL SMALL SPACE HANDLING is possible with the discriminate use of switchback conveyers. In a number of cases Heltzel-Ohio engineers have devised 180° or full switchbacks to get maximum use of the space at hand.



TUNNEL CONVEYERS feed from the bottom of the stockpile to cut handling to a minimum. Special Heltzel-Ohio tunnel gates make this system foolproof. Controlled from central panel.

Greater Profits

Heltzel-Ohio Custom Aggregate Handling Systems slash costs for both large and small operators!

The one place in your operation that you can cut costs without cutting quality is the handling of materials. The research of one leading publication pointed up the fact that 8 out of 10 contractors and yards could realize greater profits simply by bringing their handling equipment up to date.

In a recent check one operator looked over his figures and found it cost him in excess of 28 cents to handle the materials needed for a yard of concrete. He called in Heltzel-Ohio engineers who devised a system that cut this cost to approximately 4 cents a yard. The savings quickly paid for the equipment and now enables him to sell top quality at competitive prices and with much faster service.

ECONOMICAL HANDLING FOR SMALL OPERATORS is a Heltzel-Ohio specialty. Our engineers have cut costs for hundreds of small tonnage operators with simplified, inexpensive, easily controlled systems.

Consider your operation. Let a Heltzel-Ohio man show you how modern equipment will pay for itself in short order. How it will put you in the best competitive position possible. And when you think of materials handling, remember Heltzel-Ohio engineers are specialists —designing and building materials-handling equipment specifically for the concrete industry. Get the last word from those who know. Send in the coupon today!

SPECIALISTS IN HANDLING SYSTEMS FOR THE CONCRETE INDUSTRY

HELTZEL Ohio HANDLING SYSTEMS

Heltzel-Ohio Handling Systems Div.
Heltzel Steel Form & Iron Co., 31000 Thomas Rd., Warren, O.

I'm interested in reviewing my handling operation. I would like to have a Heltzel-Ohio engineer look it over at no obligation.

Name.....
Company.....
Address.....
City..... State.....

(Continued from preceding page)

Once the paver deposited the concrete on the base, the finishing operation was under the control of one man—the finishing-machine operator. All controls on the machine are grouped for operation by one man, who can start and stop any of the operations. He steers the machine by means of brakes on the tracks. While one man controlled operations on this test run, several other workmen assisted with the finishing operations.

Only the curing operations remain after the machine has passed. In this case, the surface of the base was coated with a light grade of asphalt emulsion which held water in the slab for curing and prevented bond with the finish concrete slab. Emulsion was applied with a hand spray operated from an Entyre distributor.

Quick repairs

While the new slip-form paver was demonstrating its effectiveness on this job, a broken tooth on the drive gear for the paver's boom and bucket gave a Motorola mobile radio system a chance to show its value on a paving spread. As soon as the defect was discovered, the superintendent used the microphone in his nearby pickup to call the mechanic at the company's shops. The mechanic quickly got the gear from stock and was on his way.

Meanwhile, the paver operator removed the broken gear and the shaft it drives. This done, he swung the boom far to one side. The bucket was rolled out on the boom by hand and chained out of the way. Then the operator backed the paver close to the finishing machine and dumped concrete directly onto the grade from the drum. A little extra hand shoveling and some extra work by the spreader of the finishing machine permitted the work to proceed at reduced speed.

When the mechanic arrived shortly after, he removed the broken gear from the shaft, replaced it, then cleaned, lubricated, and replaced the bearings. After a brief shutdown the paver was back in normal operation.

Preparing the base

Since the forms of the finishing machine slide along the subgrade, it is important that the subgrade or base be accurately finished and well compacted. In this case, F & C did the entire job from grading through the finished paving, and therefore had accurate control of all operations.

Project superintendent Frank Geron shows how the very wet base-course material stands up to form a perfect slab edge as the form moves along. The water-cement ratio must be about 7 gallons per sack to permit the harsh mix to be handled.

C&E Staff Photo

Grading, which included 75,000 cubic yards of earthwork in the 1.5-mile section, was done with Caterpillar DW10 and DW21 scrapers, Tournapull C Roadsters, and Caterpillar D6, D7, and D8 tractor dozers. Special compaction of the top 6 inches of the subgrade was obtained with Gebhard and Tampo sheepsfoot rollers pulled by D7 and D8 tractors. In most cases the grade was carried just a little high. Then as the sheepsfoot rollers walked out, three Caterpillar No. 12 motor graders trimmed the compacted ground to accurate grade. Under this method, it was usually possible to meet the 100 per cent modified Proctor density requirement without additional compaction with pneumatic rollers.

Sand-shell concrete

The concrete base material placed under this contract actually could be described as a cement-stabilized sand-shell base. However, it was actually concrete in every respect, and in some ways was more difficult to handle than the grade of concrete normally used for paving slabs.

Since there are no coarse aggregates available in this portion of the coastal plain, shell is widely used as a substitute. Parker Brothers & Co. has dredges which dig the shells from reefs in the bottom of the Gulf of Mexico. Shells are screened, washed, and loaded on barges to be towed to the company's batching plant. Pieces of shell range up to 2½ or 3 inches in maximum dimension. Since they are relatively thin and cup-shaped,

GEO. M. BREWSTER & SONS, INC.
ADDS 4 NEW LORAIN 85's

THE SEVENTY-SEVENTH LORAIN—to be purchased through the years by George M. Brewster & Sons, Inc., Bogota, N. J., is the new Lorain-85 shown above. It's one of four new "85's" just added to the fleet of this well-known contractor, two of which were immediately assigned to the New York Thruway job. Brewster's contract calls for 2½-million yards of grading on a 4.7 mile section near Nyack. The Lorain-85 is digging a mixture of clay and rock with a 2½-yd. dipper and a 26-ft. boom. Brewster's repeated confidence in Lorains tells all that can be said about profit-making performance.

Let your Thew-Lorain Distributor tell you the complete story about the new Lorain-85 . . . or let him fit your job with one of the many crawler or rubber-tire types in the complete Lorain line. Bid your next job on new Lorain performance!

In the new Lorain-85's, many new features go to work for Brewster . . . these include:

- FULL AIR CONTROLS • metered air operation of crowd and retract • power boom lowering and derricking • crawler travel • dipper trip • crowd brake • steering • tread lock.
- GREATER OPERATING RANGES • 26 ft. shovel boom • 27 ft. hoe boom.
- GREATER CAPACITY • 45 tons lifting capacity.
- THIRD DRUM • power load lowering • backing down the load.
- WIDER CRAWLER • with 2 speeds in both directions.
- REMOVABLE COUNTERWEIGHT.
- TORQUE CONVERTER available.

THE THEW SHOVEL CO., LORAIN, OHIO

THEW LORAIN

the larger pieces have a tendency to break in handling. At best, the material is a harsh coarse aggregate for concrete, and the mix must be quite wet to be workable. A typical batch contains about 2.5 to 3 parts shell to one part sand, with a cement factor of three sacks per yard.

This contract included 95,000 square yards of the sand-shell concrete base in several thicknesses. Most of the base under the main roadways, 24 feet wide and 6 inches deep, was put down by the finisher. The depth under ramps, service roads, and sidewalks ranges from 4 to 10 inches. The expressway lanes are being paved with a 10-inch concrete slab over the base. Service roads have 9 inches of concrete over the base. The project includes 17,000 cubic yards of concrete pavement.

The base-laying operation started about the last week in March and was completed by the middle of April. Concrete paving was set to start by May 1, and the entire project is scheduled for completion in October. Construction of the four bridges included in this contract was progressing while the other operations were under way. The bridges will be completed in time so that the entire facility can be opened to traffic late this fall.

Personnel

Supervising base and paving operations for F & C Engineering Co. is superintendent Frank Geron. Construction on the urban expressways is handled under a special setup within the Texas Highway Department. In the Houston area A. C. Kyser is chief construction engineer. He is assisted on this project by F. M. Delk, supervising construction engineer, and D. L. Wells, chief inspector. D. C. Greer is state highway engineer. THE END

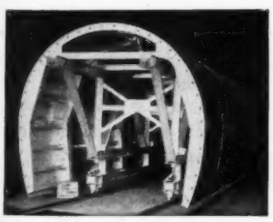
As concrete is spread across the width of the slab by an auger-type spreader, a Jackson tube vibrator consolidates the mix.
C&E Staff Photo

New surveying aid

■ Sighting on a 6-foot folding rule to establish line and grade can be made easier and more accurate with a new surveyor's target that slides over the rule. The Rule-Site locks in place easily at any point along the rule.

Made of aluminum, the target is marked in red, white, and black to provide good visibility even on sights of 1,000 feet and more. The device provides 7 square inches of sighting surface, and has graduations eight times larger than those on the folding rule.

For further information write to Rule-Site Co., Box 93, Baldwin, N. Y., or use the Request Card at page 18. Circle No. 22.



MAYO STEEL FORMS
. . . SPEED TUNNEL JOBS

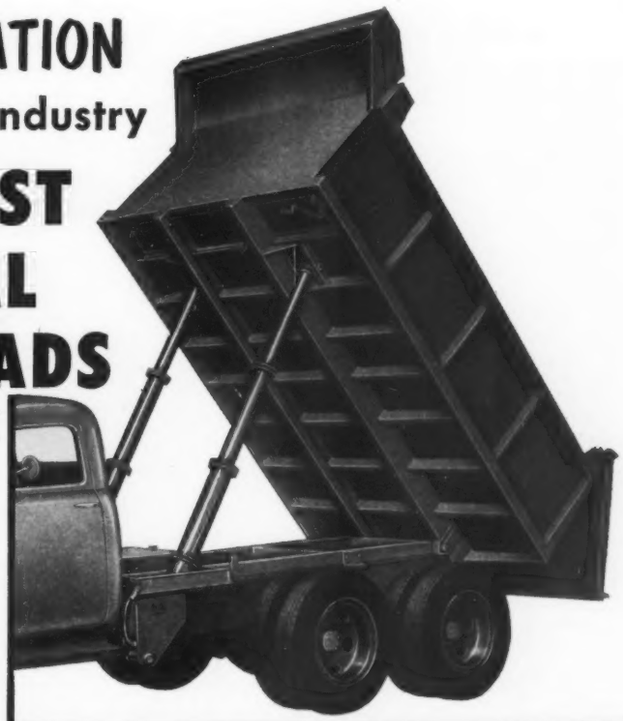
Mayo produces all types of Tunnel Forms —telescopic, non-telescopic, separate sidewall and arch, single unit, full round forms for monolithic pours, etc. Each is designed for the exact requirements of the job—be it Tunnel, Sewer or Conduit!

Write for our FREE Bulletin No. 15 or send details.

STEEL FORMS • HEADFRAMES • MUCK BINS • SHIELDS • AIR LOCKS • LOCOMOTIVES • MINE CARS • GROUTERS

MAYO
TUNNEL AND MINE EQUIPMENT
LANCASTER, PENNA.

NEW SENSATION
of the dump truck industry
FOR BIGGEST LEGAL PAYLOADS



Anthony Teleramic Twin Telescopic hoists "in mount" models 6 to 13 ton capacities

Anthony Teleramic single cylinder hoists for single and tandem axle trucks —capacities 8 to 20 tons.

ANTHONY Teleramic HOISTS

These Telescopic Hoists let you haul up to 1,000 pounds and more *additional legal payload* on every trip. The *extreme forward* location and point of lift of these new ANTHONY Hoists shifts *all the weight of the hoist* 'way up front — *transfers more of the permissable load to the front axle* — and lets *you carry far more payload on the rear axles.* ANTHONY "Teleramic" Hoists are available for bodies 8 to 18 ft. long, in capacities from 8 to 25 tons, for all trucks — straight, 6-wheelers and semi-trailers.

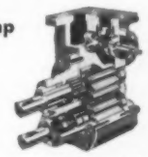
Nationwide Sales and Service

See your Anthony Distributor or Truck Dealer or write Anthony Company direct for new descriptive literature.

With RING TRUSSED Cylinders
(Pats. applied for)

Truss rings reinforce the ends of each cylinder tube to prevent "flaring", and to adjust the packing. Extra-long bronze bearings and long overlap keeps cylinders in perfect alignment and provide extra stability and long life.

Heavy Duty *Roller Bearing* Pump



The Anthony pump on all "Teleramic" hoists is of newest "combination" design. Pump and valve are built into one housing for better control, easier servicing and longer life. Pump has finest cage type roller bearings -double shafts and replaceable bronze wearplates. Valve is positive 3-way action with auto-manual check valve.

Dept. 5533
ANTHONY HYDRAULIC
ANTHONY COMPANY
Streator, Illinois
Manufacturers of Hoists, Dump Bodies and Lift Gates for Trucks and Semi-Trailers.

In the fill area, an Autocar equipped with the Tire-Tracks dumps organic material excavated during foundation work.

C&E Staff Photos

MACHINERY

Crawler-type attachments keep vehicles on the job

Rubber-tire units work through swampy area to complete excavation for new power plant

Getting equipment across a swampy and mucky area separating an existing road and the construction site of a multimillion-dollar power plant proved no problem for United Engineering & Constructors, Inc., Philadelphia, Pa., once the company hit on a method for keeping vehicles from bogging down in the mud flats.

Starting work on the Public Service Electric & Gas Co. plant last fall, the contractor diverted streams near the area and built an access road to the construction site by pushing fill from an existing road into the mud flats. But when vehicles tried to enter the construction site, they bogged down.

Rather than provide every dump truck with a dozer for getting in and out of the job site, United Engineers and the hauling subcontractor decided to equip the trucks with crawler-type tracks. This simple expedient made it possible for the contractor to employ rubber-tire equipment which might otherwise have remained idle.

For the first phase of excavation, ten Autocars were equipped with Tire-Tracks made by the firm of Keck-Gonnerman Co., Mt. Vernon, Ind. The Tire-Tracks, placed around the rear dual wheels of the Autocar dumps, increased the flotation of the vehicles, making is simple for them to enter and leave the mucky area unassisted. Moreover, the vehicles with dual tandem wheels appeared to have greater flotation than those with single or dual tires. Two

"Poor Murphy. His rig doesn't have good flotation in this soft clay."

JAEGER offers these better "tools" for paving

LAYING UP-HILL ON A DOWN-GRADE CURVE: On this section of the Hollywood Freeway, outside Los Angeles, J. E. Haddock, Ltd. laid six 12 ft. lanes of divided roadway of 8" uniform thickness at a steady average of 100 cu. yds. (337.5 lin. ft.) per hour. With ordinary finishing equipment, working down-grade on this curve would have entailed considerable hand labor carrying back and finishing to the high side of the slab. But with the Jaeger Type "X" finisher it was only necessary to set the diagonally rear screed at proper angle to keep material working up-hill and compact it solidly against the higher form.

SPREADER WORKS CLOSE TO PAVER: The job of finishing on the Hollywood Freeway was made much easier by this Jaeger screw spreader which remixed and spread the material as it came from the paver, struck off to grade and vibrated both edges of the slab. Continuous strike-off close behind the paver makes it simple to regulate the amount of concrete provided for final finishing. For maximum accuracy on high production work, the Jaeger spreader can be furnished with oscillating material screed — an exclusive advantage.

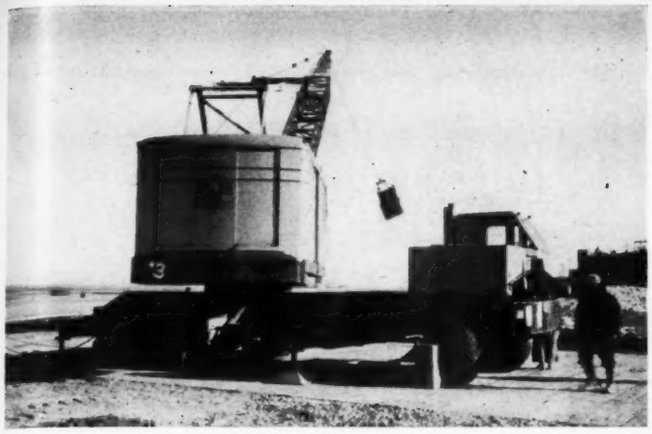
DUAL DUTY SPREADING SAVES COST: The United Counties are three Ontario counties that pooled their limited maintenance funds to stretch them farther. A typical cost-saving is their use of one inexpensive Jaeger aggregate spreader to lay both base of broken stone and 3" top of hot mix. Job shown is on 4.5 miles of County Road No. 5 in Matilda Township, laid in two 9 ft. lanes at average rate of 1800 lin. ft. per day. Workmen on tail platform are scattering loose material on top surface to improve its skid resistance.

For full information on these machines and methods, operating data and prices, talk with your Jaeger distributor or write us. Catalog on request.

THE JAEGER MACHINE COMPANY

701 Dublin Avenue • Columbus 16, Ohio

AIR COMPRESSORS • PUMPS • LOADERS • CONCRETE MIXERS • TRUCK MIXERS



A P&H 555 crane, one of the rubber-tire machines equipped with the crawler Tire-Tracks, places fill at the site of the plant.

A Gradall moves across the soft ground to the power plant. Because of the increased area of ground contact with Tire-Tracks, the rig does not dig in.

P&H 555 cranes and a Gradall were similarly equipped with the Tire-Tracks.

Plant foundation

Dump trucks and rubber-tire cranes, equipped with the Tire-Tracks, have removed approximately 75,000 cubic yards of peat muck to date for the 250,000-square-foot foundation of the plant. In a 7-hour day, up to 6,000 cubic yards of the material has been excavated.

A wellpoint system, completely encircling the foundation site, keeps the area dry while timber piles are being driven. A total of 10,000 piles are being driven to refusal in the substrata of shale lying about 25 feet below the level of excavation.

A total of about 650,000 yards of hydraulic fill was pumped to any desired location on the site from an adjacent water basin which is fed by a creek. The sand-gravel fill was obtained by draglines upstream, loaded into barges, floated to the basin, and unloaded in the water.

Under the present contract, only two generating units are being built for the plant. When they are completed in September, 1956, the need for additional units will be determined.

Personnel

H. B. Smith, vice president of United Engineering & Constructors, is the construction manager for the project. M. Skeie is assistant construction manager and Karl Zoeltsch is job engineer. George Reinhardt, Inc., New York City, supervised the installation of Tire-Tracks on mobile equipment used on the project.

THE END

Equipment for washing and classifying aggregate

■ A new catalog available on request describes the entire line of washing and classifying equipment manufactured by Eagle Iron Works, 129 E. Holcomb Ave., Des Moines, Iowa.

Among the many large illustrations are 45 views of recent installations.

To obtain Catalog 55 write to the company, or use the Request Card at page 18. Circle No. 110.

FOR IRRIGATION & DRAINAGE WATERWAYS

↓ BRISCOE DITCHERS ↓

BRISCOE DITCHERS Dig New Ditches and Clean Old Ones for new lows in Time & Cost

BRISCOE DITCHER Makes new ditch at rate of 26,874 yards in 15 hours time!

The photo to left shows the latest BRISCOE DITCHER, the Model #68, under actual field conditions, forming a new ditch in heavy loam. Ditch had 8-ft. flat bottom, slope better than 1½ : 1 for a total depth below grade of 5½ feet, with spoil bank adding another two feet. Total yardage was 26,874 in 15 hours, averaging 1,792 per hour, for average cuts of 6½ inches for each of the ten passes required to make a perfect, finished ditch. Various combinations of power used averaged 355 HP.

↓ BRISCOE SLOPERS ↓

Briscoe Slopers for Low Cost Weed Control & Maintenance

"WELL PLEASED WITH SLOPER," says CONTRACTOR
"OPERATING COST IS ABOUT $20 PER MILE . . ."
"DRAGLINE $350 . . SEE THE SAVING"
"USE IT VERY SUCCESSFULLY FOR DE-MOSSING"

OSCAR STRAIGHT CONTRACTOR
ALL KINDS OF EARTH MOVING
Billings, Montana

E.V.Briscoe & Son
Route 2 Box 118
Kerman California

August 31-'54

Dear Mr Briscoe:

I have wanted to write to you to tell you what a good job the Briscoe sloper is doing for me.

It is mounted on a T.D. 18,with a T.D. 9 towing to take the side draft.I have cut 7 and 8 foot berms in one pass reaching down for draft,some approximately 14 feet.These are tough wire-grass berms that are cut and rolled on top without a break for hundreds of feet.

Besides clearing and shaping and weed control,I use it very successfully for re-mossing-have cleaned ditches completely choked with moss.It doesn't seem to matter what size the ditch is as we have cleaned from the largest canals to the smallest laterals and waste ditches.Some full of water and some not.Have also used it for leveling banks.

In places we have traveled 3 and 4 miles per hour.At operating cost is about $20.00 per mile.It would be impossible for a dragline to do it for $200.00 per mile,so you see the saving.

We cleaned 200 miles of ditch in 20 days.This work was done for the bureau of reclamation Huntley Irrigation project at Billings Montana.

I am well pleased with the Briscoe sloper and wanted to let you know.

Very Truly Yours,
Oscar Straight Construction
By- Oscar Straight
Owner

BRISCOE Manufacturers OF CALIFORNIA

Above photo shows general condition of ditches worked by Mr. Straight, referred to in letter at left. Note that the ditch bank was reshaped, eliminating all weeds, berms and cave-ins. Costly, time-killing water shut-downs not necessary, making maintenance possible at any time. There is no better, faster or cheaper way than the BRISCOE way.

Write or Phone for Details

BRISCOE Manufacturers OF CALIFORNIA

Rt. 2, Box 118 • Kerman, Calif. • Phone 8-110

One of the first Allis-Chalmers HD-21's to be seen in the East pulls a LeTourneau FP Carryall during scraper operations at the Fox Lane School site. Behind the Carryall, an International TD-14 with dozer blade push-loads the scraper.

C&E Staff Photos

MACHINERY

Big rig spurs grading at 155-acre school site

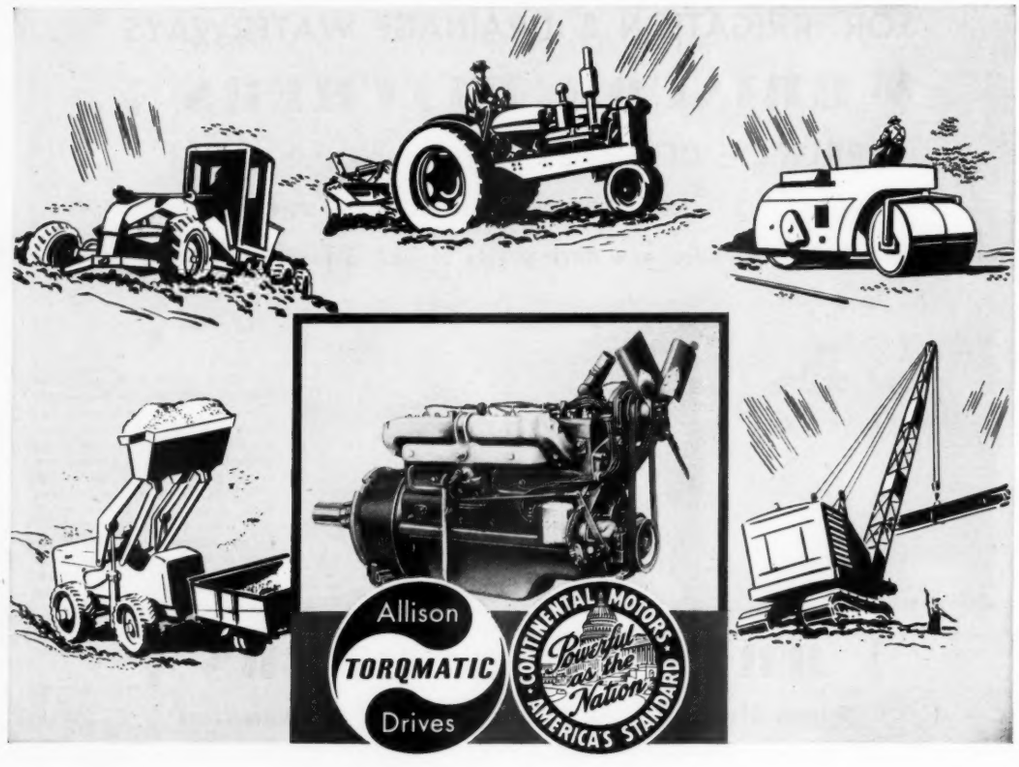
In the fall of 1956, approximately 1,200 children from the towns of Bedford, Pound Ridge, and Mt. Kisco in Westchester County, New York, will begin attending classes at a new $3 million junior-senior high school, now in the initial stages of construction.

Ground was broken last March on the 155-acre Fox Lane School site when Thalle Construction Co., Yonkers, N. Y., moved in with a large spread of earthmoving equipment. The site, located on State Route 172 between Bedford and Mt. Kisco, was chosen for its central location and for its gently rolling topography. Of the total area, about 47 acres will be utilized for the school buildings and athletic facilities.

Under a $147,000 preliminary grading contract, Thalle has approximately 80,000 cubic yards of earth and 25,000 cubic yards of rock to move. Cuts and fills balance out, with no waste or borrow anticipated. The contractor expects to complete the grading by the end of this month.

To expedite earthmoving, Thalle moved in a new Allis-Chalmers HD-21 tractor—one of the first in the East. Using the HD-21 to pull a LeTourneau FP Carryall, the contractor is moving up to 2,000 cubic yards in an 8-hour day. An International TD-14 push-loads the scraper. The material is mostly clay, and hauls seldom exceed 1,000 feet. Besides the HD-21, Thalle has two Allis-Chalmers HD-15 tractors, one for general dozing on the fills and one for clearing and rock removal. The tires of the tractors and scraper compact the fill areas.

Drilling for the rock excavation is



This Team
gets more work from less horsepower

YOU CAN GET an Allison TORQMATIC Converter matched to a Continental RED SEAL gasoline engine in a wide range of hard-working equipment.

When you do you'll get shock-free power that cuts costs all along the driveline—that keeps your equipment on the job building profits, not in the shop raising costs.

The TORQMATIC-RED SEAL team helps manufacturers reduce horsepower with no loss in equipment work-ratings. That's because the TORQMATIC Converter can *triple* engine torque—helps a lower-horsepower engine deliver higher *working* power.

And it automatically balances engine output with load demand to boost working speed and engine efficiency—increases engine life and cuts maintenance costs by keeping the engine in its most efficient operating range at all times.

Allison's newest TORQMATIC Converter is easy to install and maintain. It is completely self-contained, requires no complicated piping or other connections. It has a built-in pump and oil cooler, carries its own oil supply, has a simple dip-stick to check oil level.

You can get an Allison TORQMATIC Converter matched to gasoline or Diesel engines from 40 to 400 horsepower—a TORQMATIC Transmission for engines up to 300 horsepower. Ask your equipment dealer or manufacturer about Allison TORQMATIC DRIVES next time you buy—or write Allison Division of General Motors, Box 894C, Indianapolis 6, Indiana, for more details.

GM TORQMATIC Allison
TORQMATIC DRIVES

TEMPORARY PORTABLE PIPE LINES . . . are easy to set up with MOULTON'S
patented
Quick Coupler

lightweight
STEEL OR ALUMINUM PIPE!
Sizes 2" to 10". Carrying handles permit fast coupling and uncoupling. Flexible, pressure tight and easy to store. Write for FREE illustrated information.

MOULTON IRRIGATION CO.
Dept. CE-6
Withrow, Minn. Diehlstadt, Mo.

Using a Bay City 650 shovel with 1½-yard bucket, Thalle Construction Co., removes blasted rock at the Fox Lane School site in Westchester County, New York. Approximately 25,000 cubic yards of rock is being used as fill.

being done by three wagon drills—a Worthington and two Ingersoll-Rands—equipped with carbide bits. Air for these units is supplied by a Worthington 600-cfm air compressor. For one blast, the contractor loaded 260 holes, 5 to 12 feet deep, with 1,300 pounds of du Pont 40 per cent dynamite. The blasted rock, used as fill, is removed by a Bay City 650 shovel with 1½-yard bucket and loaded into two Euclid 12-yard end-dumps. An Allis-Chalmers HD-9 with front-end loader spreads the rockfill. The maximum fill is 18 to 20 feet, while the deepest cut is 16 to 18 feet.

Thalle uses Cities Service lubricants to grease the equipment and a portable Lincoln welding machine for field repairs. The greasing and welding of equipment is handled at a maintenance shop set up on the job.

Joseph Thalle is the superintendent for the Thalle Construction Co., which has a crew of 15 on the grading job. THE END

Transverse-joint support for concrete slabs

■ The Bethlehem dowel unit, a transverse-joint support for use in concrete highways and airport pavement, is illustrated in a booklet available on request. The unit is designed to reduce to a minimum the load-transfer problems caused by heavy wheel loads, and is particularly recommended for use in thick slabs.

The dowel unit consists of two identical sections, in each of which round dowels are welded to a side frame and center wire. The dowels extend across the joint and are so installed that they transfer the load from one side of the joint to the other while offering no substantial restraint to the movement of the slab in its own plane.

Essentially a contraction joint, the Bethlehem dowel unit can be used with virtually any type of contraction or expansion material. When used in this manner, its sections pull apart readily to accommodate a steel plate, cork, or other filler.

To obtain this literature write to Bethlehem Steel Co., Bethlehem, Pa., or use the Request Card at page 18. Circle No. 63.

Third-drum assembly for excavator-cranes

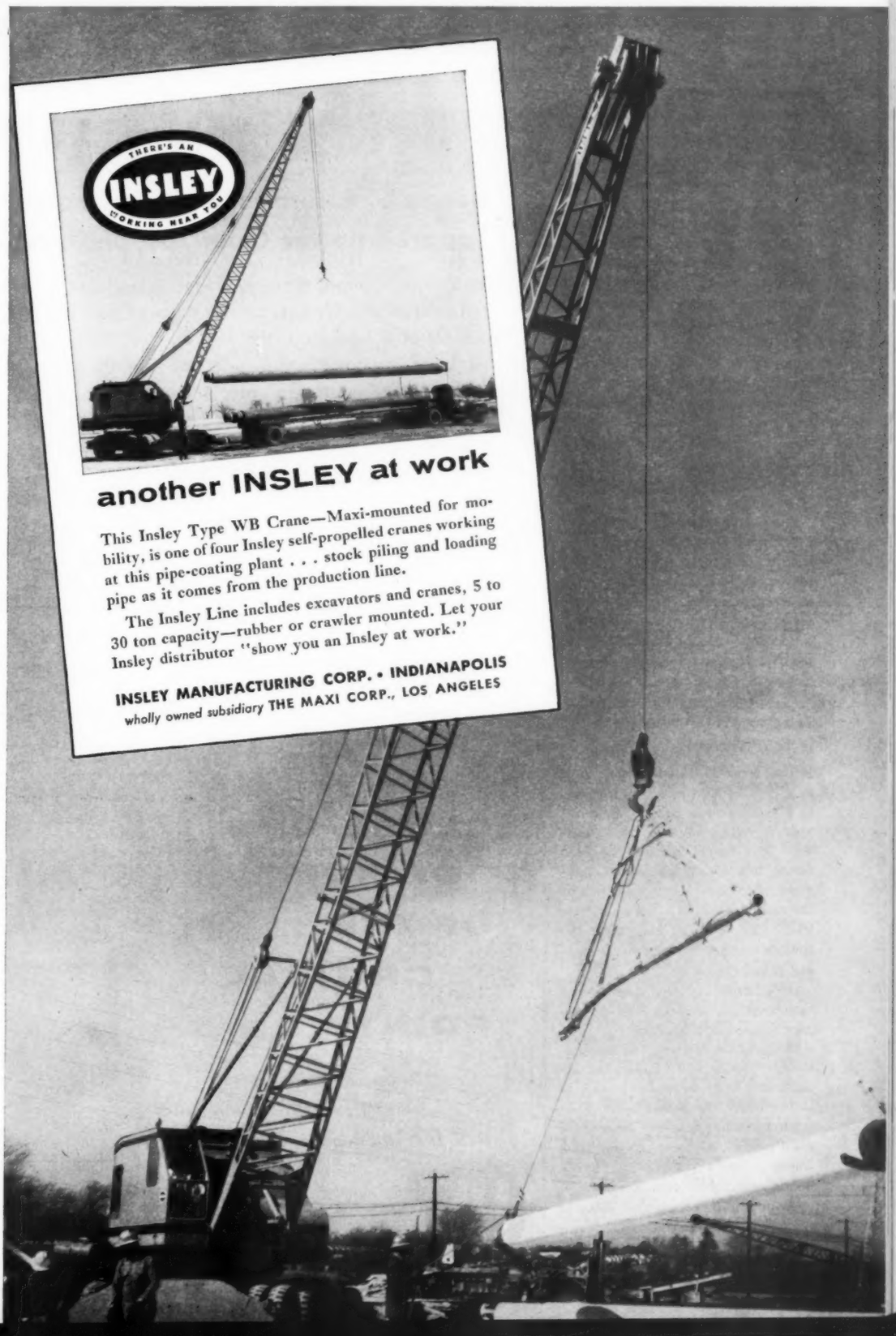
■ A third-drum assembly, particularly useful in pile driving work, is now available for Bucyrus-Erie 38-B, 51-B, and 54-B excavating machines equipped with lifting crane or clamshell front ends. The auxiliary assembly equipment can be mounted on any of these models in the field, provided they do not have independent propel.

The main units of the third-drum assembly are the clutch shaft and mounting, drum and drumshaft, boom equipment, and operating controls.

The clutch shaft mounts directly in front of the hoist drum and is driven by the hoist gear. The third drum and its shaft are mounted in front of the clutch shaft, from which they are chain-driven. A hand-lever control for operating the clutch and a foot pedal for applying the brake are located at the operator's station.

Drum capacity is about 300 feet with ¾-inch-diameter cable. For a single-part line, maximum load is 10,000 pounds; line speed is 160 fpm.

For further information write to Bucyrus-Erie Co., South Milwaukee, Wis., or use the Request Card at page 18. Circle No. 62.


THERE'S AN
INSLEY
WORKING NEAR YOU
another INSLEY at work
This Insley Type WB Crane—Maxi-mounted for mobility, is one of four Insley self-propelled cranes working at this pipe-coating plant . . . stock piling and loading pipe as it comes from the production line.
The Insley Line includes excavators and cranes, 5 to 30 ton capacity—rubber or crawler mounted. Let your Insley distributor "show you an Insley at work."
INSLEY MANUFACTURING CORP. • INDIANAPOLIS
wholly owned subsidiary THE MAXI CORP., LOS ANGELES

A P&H Miti-Mite 55-TC truck crane with trench-hoe attachment digs trenches for house laterals on a housing-development project near Elgin, Ill. The contractor realized savings of $4 an hour over former methods by using this unit.

Case history

This truck crane saves contractor $4 an hour

An estimated saving of $8,780 has been effected by Steffan Bros., sewer and water contractors of Carpentersville, Ill., in using a P&H Miti-Mite truck crane with trench-hoe attachment for lateral trench digging on a residential-development project near Elgin, Ill. The figure represents the difference in cost to the contractor over machine and rental expenses.

Steffan formerly rented a truck crane for 9 hours a day at $12 an hour. Overtime wages brought the per-hour expense to the contractor to more than $13. After purchase of the Miti-Mite, the cost of operation to the contractor dropped to $9.25 an hour. This $4 saving per hour adds up to the $8,780 figure.

The P&H unit has averaged 400 feet a day or 50 feet an hour of 30-inch-wide trench on the project, and has proved efficient in cutting into frozen or rocky ground, heavily wooded areas, and sticky loam. Extra jobs in connection with the project are also handled by the contractor at small cost with the versatile truck crane.

Tractor attachment is four shovels in one

■ The versatile International Drott Four-In-One Skid-Shovel is described in a catalog from Drott Mfg. Corp., 3841 W. Wisconsin Ave., Milwaukee, Wis. This equipment can be converted into a bullclam shovel, bulldozer, Skid-Shovel, or a clamshell by the manipulation of a shovel selector lever. The operator can make the change whether the machine is moving or standing still.

In addition to the four shovel variations, the versatile Four-In-One may be used as a backhoe.

Designed for use with the International TD-6 crawler tractor, the attachment is 68 inches wide and 40 inches high. The shovel holds ⅞ of a yard and has a lifting capacity of 3,000 pounds. A model for the TD-9 tractor holds 1¼ yards and has a lifting capacity of 4,000 pounds.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 84.

Engines protected from low-oil-level damage

■ Protection against damage resulting from operation with insufficient oil is now available at small added cost on all horizontal-shaft models of Continental Motors heavy-duty air-cooled engines. This protection is provided by an automatic ignition cutoff that shorts the engine out when the crankcase oil level drops too low for safe operation.

The device has only one moving part, a small closed metal cylinder which is free to float within a metal guide grounded inside the engine base. When the oil level drops too low for proper lubrication, one end of this float comes to rest on a brass stud connected to a lead from the breaker points but insulated from the base. Since the other end of the float is in contact with the grounded metal guide surrounding it, the effect is to short-circuit the ignition and stop the engine.

Replenishment of the oil raises the float off the stud, eliminating the short and permitting the engine to be restarted.

For further information write to Continental Motors Corp., 12800 Kercheval Ave., Detroit 15, Mich., or use the Request Card at page 18. Circle No. 51.

Hydraulic power trowel

■ A hydraulic power trowel that does both floating and finishing of concrete with a single set of dual-purpose

IN THE AGGREGATE

Here's U. S. Rubber belting hauling aggregate for Chief Joseph Dam

You're looking at one of the biggest aggregate plants ever set up. It supplies aggregate for concrete for the big Chief Joseph Dam in the State of Washington—the dam that will have the world's largest single-unit powerhouse under one roof, the dam that will rank second only to Grand Coulee in operating capacity.

This aggregate ranges from fine sand to heavy boulders as large as 20″ in diameter. The rock breaks clean, leaving sharp edges which are good for concrete interlock but bad for ordinary haulage conveyor belting. To handle this most critical portion of the haulage, United States Rubber Company conveyor belts were selected. Now in their fifth construction season, the belts are still going strong, giving *trouble-free* service. This is another instance of U. S. Rubber's Three-Way Engineering Service: "U. S." belt engineers work with the designers of the conveyor system and the engineers of the dam—to make sure of providing the *right* belt.

U. S. Belting and Engineering Services are obtainable through any of the 27 "U. S." District Sales Offices, or write to the address below.

CLOSE-UPS OF SOME OF THE CRITICAL POINTS

"U. S." Research perfects it
"U. S." Production builds it
U. S. Industry depends on it.

Close-up of shovel loading bank-run onto U. S. Rubber belt—first step on its journey throughout the aggregate plant.

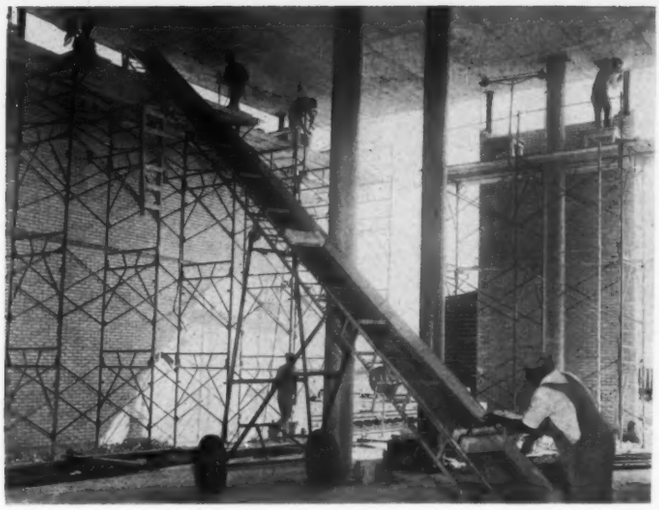
US RUBBER UNITED STATES RUBBER

Hose • Belting • Expansion Joints • Rubber-to-metal Products • Oil Field Specialties • Plastic Pipe and Fittings • Grinding Wheels • Packings • Tapes

blades is described in a leaflet from Kelley Machine Division, Wiesner-Rapp Co., Inc., 285 Hinman Ave., Buffalo 23, N. Y. Because of the cushioning effect of the hydraulic system, the Kelley Hydra-Trowel does not tip or jolt when it strikes a loose piece of aggregate. A low center of gravity also aids stability.

Other features of the machine are that it can work close to walls and columns, and that it has a stationary guard ring, convenient throttle and blade-pitch control, and one-point lubrication. Gasoline engine and electric-motor-powered models are available with trowel diameters of 34 inches.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 49.



Seven bricks, placed on the portable commercial elevator, start their way to the platform at the top of the Adjustomatic scaffold, where they will be picked up by a workman supplying the bricklayers. Bricks need be carried only short distances, since the portable elevator can be moved easily from place to place.

Case History

Elevator makes brick work move swiftly on new plant

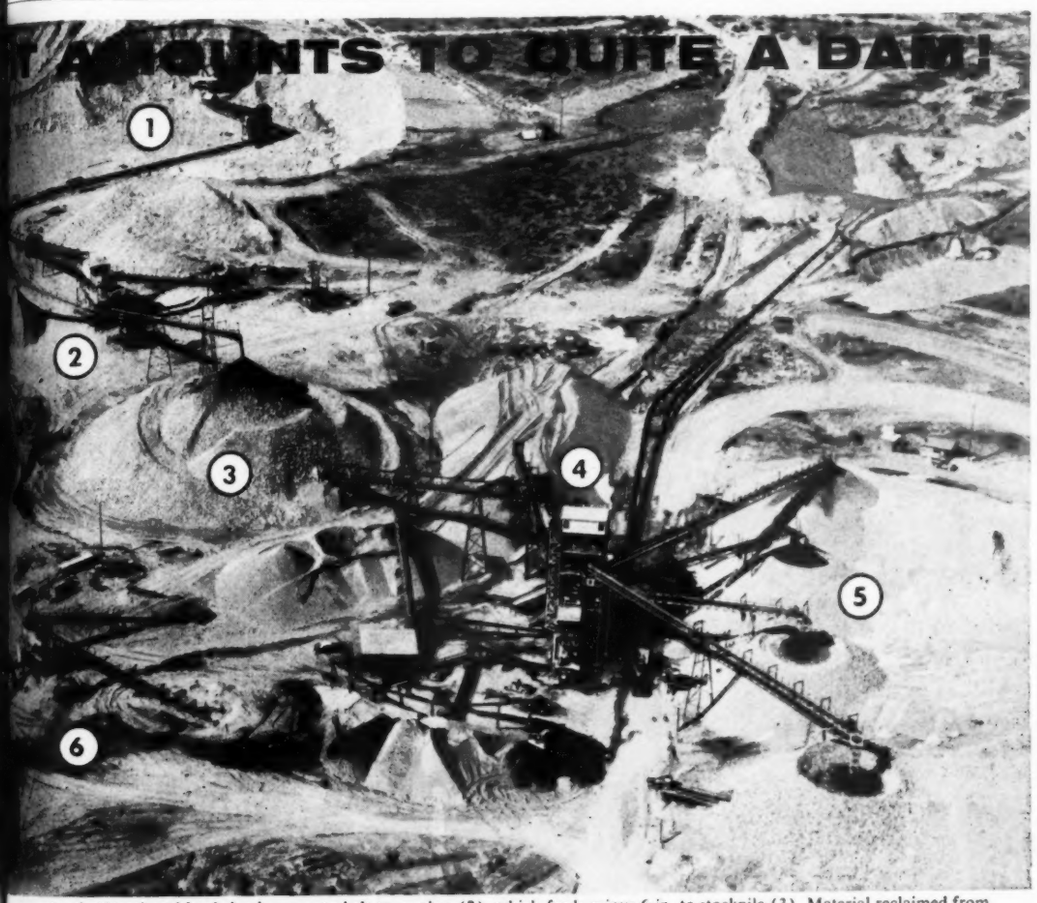
Contractors on the O. N. Stevens Water Filtration Plant for Corpus Christi, Texas, moved brickwork from the loss to the profit columns on their books by substituting a mechanized elevator for the hand hoisting method being used to bring brick to crews working on scaffolds.

After work was under way, C. H. Leavell & Co., El Paso, and Coastal Bend Construction Co., Corpus Christi, joint-venture contractors on the $3,408,000 facility, secured a portable commercial elevator, manufactured by Sam Mulkey Co., Kansas City, Mo., in an attempt to put this part of the job on a more economical footing.

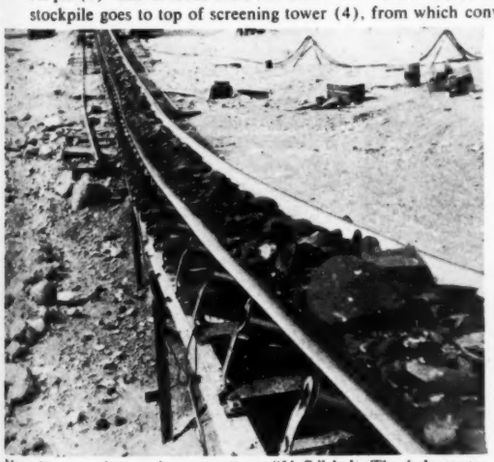
Of the chain-and-flight type commonly used for handling coal and other material, the elevator is powered by a small gasoline engine. The 40-foot length was selected to meet the maximum lift required for the job. A simple hand-operated cable adjustment raises or lowers the upper end of the elevator to meet the exact height of the scaffold. The machine, mounted on two rubber tires, is easily rolled from place to place by two workmen.

With the elevator, it was possible to spot a railroad carload of brick on a siding just outside the building. A plank ramp from the car to the ground made it possible to load wheelbarrows on the car and wheel them directly to the elevator.

Using brick tongs, the workmen picked up seven bricks at a time, stacking them carefully in the wheelbarrows. Loaded wheelbarrows were wheeled to the foot of the elevator and bricks were transferred in groups of seven to the flights of the elevator. The 16-inch flights were just wide enough to hold the seven bricks. As fast as a workman could unload his wheelbarrow, the elevator hoisted the bricks to the platform of the Adjustomatic scaffold, and other workmen carried them to the bricklayers. Since the elevator was easily moved from place to place, it was never necessary for the workmen on the scaffold to carry the bricks more than a few feet to the bricklayers.



At pit (1)—shovel loads bank-run onto belt to crusher (2), which feeds minus 6-in. to stockpile (3). Material reclaimed from stockpile goes to top of screening tower (4), from which conveyors radiate to coarse-aggregate piles (5) and sand piles (6).



Note large and jagged aggregate on "U. S." belt. The belt starts the material from the pit to the rock plant.

"U. S." belt discharging aggregate onto one of the immense surge piles.

COMPANY MECHANICAL GOODS DIVISION · ROCKEFELLER CENTER, NEW YORK 20, N. Y.
Molded and Extruded Rubber and Plastic Products • Protective Linings and Coatings • Conductive Rubber • Adhesives • Roll Coverings • Mats and Matting

The new Link-Belt Speeder Model UC-68 utility crane has been designed to handle a wide variety of jobs.

New rubber-tire crane with 15-ton capacity is versatile unit

■ A self-propelled rubber-tire utility crane has been introduced by Link-Belt Speeder Corp., 1201 Sixth St. S. W., Cedar Rapids, Iowa.

The hydraulically-controlled Model UC-68, with 15-tons of lifting capacity, has been designed to lift stockpile scrap or bulk materials, dig, set steel, and perform hundreds of other jobs in the field or in the yard. It works equally well with crane, clamshell, dragline, lifting magnet, shovel, or hoe attachments. Equipped with a gasoline engine and a torque converter, the machine travels at speeds up to 7 mph.

Like all Link-Belt Speeder machines, the UC-68 features the Speed-o-Matic power hydraulic control system. This system offers easy, fast, and accurate handling and spotting of crane loads and gives the operator a feel of the load for safe high-speed operation. The fingertip control system also reduces operator fatigue and minimizes on-the-job clutch adjustments.

With the Speed-o-Matic control system, variable hydraulic pressure acts directly on the clutch. There is no mechanical linkage, and because the clutches are self compensating for heat and normal lining wear, there is no need for precision clutch adjustments. All clutches, except the shovel retract clutch, are interchangeable.

The UC-68 has an independent boom hoist for power-controlled raising or lowering of the boom. Two important optional features are reversing clutches for either or both main drums, and independent swing and travel.

Antifriction bearings, splined shafts, and precision-machined surfaces are features of the upper machinery. The machine has all-welded stress-relieved construction throughout. The upper machinery rides on eight conical hook rollers which not only minimize wear, but also eliminate center-pin pull.

Hydraulic stabilizers and easily detachable outriggers, are optional equipment. A retractable high gantry which reduces boom and boom cable stresses in long boom operations is also available.

For further information write to the company, or use the Request Card at page 18. Circle No. 4.

Worthington appoints distributor supervisor

The new distributor supervisor for the concrete machinery and contractor's pump division of Worthington Corp., Harrison, N. J., is L. V. Gilroy. Mr. Gilroy will be responsible for developing a stronger distributor organization for the equipment produced by the Plainfield, N. J. division, and will work in cooperation with district representatives.

Two new catalogs show rules and precision tools

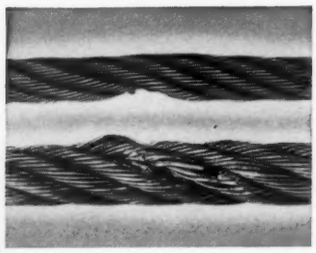
■ Two new catalogs, one listing tapes and rules and one on precision tools, are available on request from Lufkin Rule Co., Saginaw, Mich.

Catalog No. 104 describes steel tapes, engineers' tapes, surveying and chain tapes, woven tapes, tape rules, spring-joint rules, lumber rules, and miscellaneous special rules, gages, and squares.

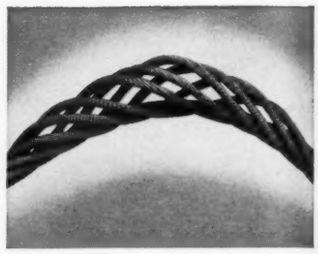
Catalog No. 8 is designed as a handbook and buyer's guide for toolmakers, machinists, and others who use precision tools.

To obtain these catalogs write to the company, or use the Request Card that is bound in at page 18. Circle No. 94.

Tuffy® tips on preventing

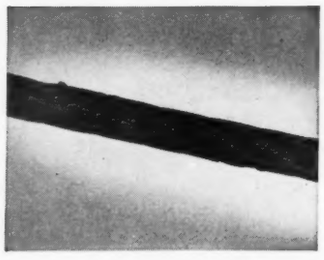


These two photos show what happens when rope is run over or struck by a hard object and crushed. The damage to the strands greatly reduces the service life so carefully built into the rope.

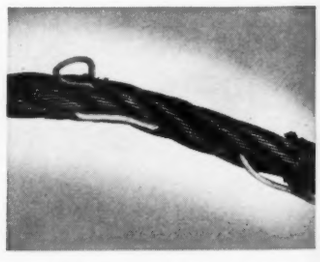


Sudden release rebound from an overstressed condition may often cause birdcaging. Throwing a loop into the rope is also a major cause of birdcaging. Lang Lay ropes in particular are vulnerable to this abuse.

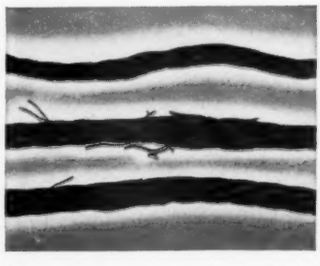
Severe corrosive water conditions caused rust and corrosion to produce a one-strand break in this rope. Lubrication during the time the rope was in service would have retarded the damage . . . added greatly to the rope's life.



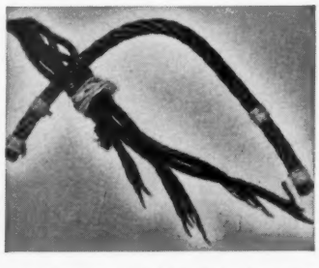
If broken in improperly, high strands like these may result. When installing, make sure that the fabricated relation between *strand with strand* and *strands with core* are not changed.



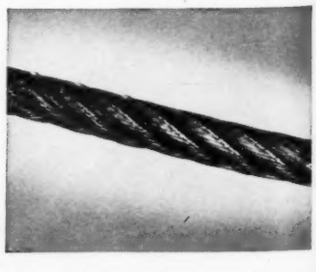
Nailing a wire rope through the core often causes many undesirable results. The wires and the core are badly damaged. A high strand may develop near the end or many feet away.



Here are three types of open kinks, all resulting from mishandling of wire rope. Guard against kinks by winding rope properly on the drum, and *never* pull a loop smaller, always enlarge it then straighten out the rope.



The start and finish of doglegs; the end being the point when all the wires on one side of the rope were worn through. Anything, such as a pulled loop, that causes a permanent bend or "set" will result in a dogleg.



While different wire rope is constructed to resist abrasion to different degrees, improper use leads to injury. Watch for abrasion and when it begins to show locate the point where it is occurring and correct the cause.

Case history

"Junior" paver is answer to smaller blacktop jobs

Paving jobs too small to warrant use of the big self-propelled machines and too big for the ordinary hopper on wheels are handled easily and economically by Cipriano Gravel Co., Mt. Morris, N. Y., with an Adnun Jr. 8 paver. Such medium-sized jobs include paving for parking lots, large patching jobs, inside asphalt paving, and work on driveways, gas station aprons, cemetery roads, sidings, and city streets.

On a recent project, Cipriano used the Adnun Jr. to spread base courses and pave four streets, each 24 feet wide and approximately 1,400 feet long, in Perry, N. Y. Each street was paved in three days with the Adnun Jr.

In one day, this Adnun Jr. 8 spread 270 tons of stone 3 inches thick on a street in Perry, N. Y. The machine also applied blacktop to the street, proving much more economical for this kind of project than the big self-propelled type of paver.

On the first day, 270 tons of stone was put down to form a 3-inch layer over an 8 to 10-inch gravel course. This base was penetrated with oil. On the second day, a 1½-inch base of colprovia was laid and compressed—a phase involving approximately 170 tons of material.

On the third day, the Adnun Jr. placed a 1-inch topping of colprovia.

Cipriano found the paver's easy portability a decided advantage. Easily coupled to a truck for moving, the machine's continuous course correction effected a smoothness said to be impossible to achieve with the ordinary wheeled hopper.

Conveyor belt reinforced with synthetic fabric is strong but flexible

■ A new conveyor belt claimed to be 400 per cent stronger than conventional cotton-reinforced belts has been developed by Hewitt-Robins, Inc., 666 Glenbrook Road, Stamford, Conn. The belt is designed to transport stone and other bulk materials over long distances and up steep grades.

Reinforced with a new synthetic fabric called Super Raynile, the belt is pliable and flexible despite its high strength. Less expensive than steel-reinforced belts, it can be spliced quickly in the field without special equipment.

The belt is expected to solve difficult material-handling problems where topography and other conditions make it advisable to use a long conveyor in one section. For example, it is estimated that a single conveyor section six miles in length could be built over level terrain to carry material at the rate of 400 tons per hour by using a six-ply Super Raynile belt 30 inches wide. A belt of this construction and width could lift material from ground-level to a height of 850 feet—the approximate height of the RCA Building in New York City.

A series of these conveyor sections could be linked together to move material in a continuous flow over distances of hundreds of miles.

The new belt will be manufactured in various widths up to 72 inches and in thicknesses ranging up to 15 plies.

For further information write to the company, or use the Request Card at page 18. Circle No. 123.

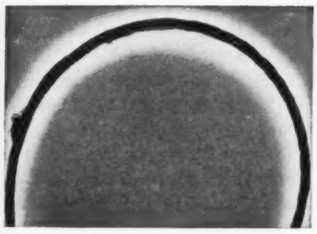
How to re-sharpen pavement-breaking tools

■ Tips on the re-sharpening of pavement-breaking and clay-digging tools are contained in a folder from Vulcan Tool Mfg. Co., 41 Liberty St., Quincy 69, Mass. The procedure described covers forging, hardening, and tempering.

Also listed in the literature are four ways by which unnecessary breakage may be avoided.

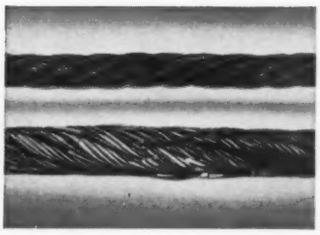
To obtain this literature write to the company, or use the Request Card that is bound in at page 18 of this issue. Circle No. 46.

damage to *Wire Rope*



When a popped core occurs, continued use causes the rope lay to lengthen out considerably. This displacement of the core is usually caused by load tension being suddenly removed from the rope.

Here is an example of excessive pinching in the sheave grooves. This rope lasted through only 1½ hours of service. To prevent pinching, make sure grooves are not worn deep and that the bearing surface is sufficiently large.



Excessive drum crushing like this occurs at points of cross-over or when rope is wound unevenly. Check for even winding of each layer on the drum to prevent crushing of this type.

Put the Knowledge of Specialists to Work on Your *Wire Rope* Problems

Their years of field-testing experience and solutions arrived at and proved both in the field and in our outstanding wire rope laboratory are yours to make use of whenever a rope problem confronts you.

In addition to standard wire ropes, Union Wire Rope specialists have produced a family of wire ropes for special purposes. Ropes that give you the construction, type of steel and characteristics best suited to each particular job for which each of the Tuffy Wire Ropes is especially designed and constructed.

The Tuffy Ropes they have developed make ordering easy and *sure*. Next time you want wire rope, just...

Say Tuffy—No Need For Complicated Specifications

Tuffy Scraper Rope
Mount a reel on your scraper and move more yardage per foot. Flexible to resist sharp bends, stiff enough to resist looping and kinking.

Tuffy Dragline
Rides smooth on drums and hugs the drum when casting. Extra flexible, yet constructed to give maximum abrasive resistance.

Tuffy Dozer Rope
Mounted on special 150' reel that lets you use rope you now throw away! Increases service life and reduces down-time. 1/2" and 9/16".

Tuffy Slings & Hoist Line
A hoist line that gives you extra service life. Slings of 9-part machine-braided wire fabric fight kinking — a matched team of balanced performers.

Your Union Wire Rope Distributor Is Good At Solving *Wire Rope* Riddles. When you have a wire rope problem, give your Union Wire Rope distributor a call for hurry-up service. Chances are you'll find he has the correct answer at hand—because part of his job is figuring out how your equipment can give you the best operation, at the lowest operating cost! Feel free to call on him anytime.

union *Wire Rope* corp.
2260 Manchester Avenue, Kansas City 26, Mo.
Specialists in High Carbon Wire, Wire Rope and Braided Wire Fabric

This cutaway drawing shows the Hystaway backhoe mucking out blasted rock from the entrance of a sloping penstock tunnel on the Folsom Dam project in California. The rig proved stable on the 36 per cent grade, and also maneuvered easily in the 20-foot-diameter working space. ►

Case history

Backhoe solves problem of tight working space

Driving penstock tunnels which will feed water to the Folsom Dam powerhouse on the American River near Sacramento, Calif., posed a problem for the contractor, Guy F. Atkinson Co., South San Francisco, Calif. These 475-foot-long tunnels had to be driven uphill at a 36 per cent grade through solid rock. The 20-foot diameter provided little working space for big machinery.

Handling shot rock at the surface was the ticklish aspect of the job. Both the slope and the small working area inside the tunnels prevented the use of full-scale revolving shovels. Drag scraper methods would not do the job because of the size and volume of rock. And bulldozers could not get around the rock at the face of the tunnel to push the material out.

Atkinson put a Hystaway backhoe mounted on a Caterpillar D8 tractor on the job, and his problem was solved. The machine's low center of gravity allowed it to remain stable while traveling and working on the steep slope. The backhoe scraped the rock away from the face of the tunnel so that a bulldozer could get behind the rock and push.

The durability, production efficiency, and easy maneuverability of the rig enabled Atkinson to complete the tunnel work in 55 days—and meet his schedule.

Manual shows use of forms on foundation structures

■ The use of Atlas Compo forms on various foundation structures is illustrated in a manual from Irvington Form & Tank Corp., 20 Vesey St., New York 7, N. Y.

The literature includes engineering drawings taken from actual job layouts to give the reader a clear idea as to how the forms can be used to advantage on specific typical foundation-wall jobs.

Sketches show the use of the forms on stepped footings, brick shelves, pilasters, and high walls.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18 of this issue. Circle No. 73.

Electric truck hoist

■ A small crane that mounts on the platform of a truck handles up to 1,000 pounds at a radius of 4 feet. The 4-foot boom of the electrically-powered crane swings 360 degrees. The Model 1000 Hoist-O-Matic truck crane can stop the load instantaneously at any height with automatic braking. The crane is 6 feet high.

A complete power unit is mounted in the base of the crane for simplified installation and service. The crane takes up only 18 × 23 inches of mounting surface. Installation requires the drilling of 5 holes and connection of the electric cables to the truck battery.

For further information write to Hoisters, Inc., 1913 Broadway, Kansas City, Mo., or use the Request Card at page 18. Circle No. 167.

The Model 1000 Hoist-O-Matic truck crane lifts up to 1000-pound loads.

Unique use of LACLEDE STEEL JOISTS

saves building time and cost for new Missouri high school

PACIFIC HIGH SCHOOL
Pacific, Mo.

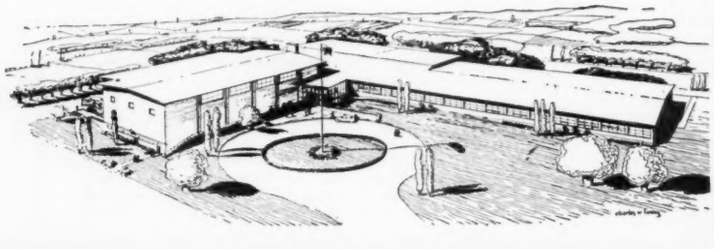
Contractor:
Juengel Construction Co., St. Louis

Architect:
Charles Lorenz, Kirkwood, Mo.

The new Pacific High School provides an excellent demonstration of the versatility of Laclede Straight Chord Steel Joists and their adaptability to specific architectural requirements.

By using two single joists with cantilever extended ends on each side of a three bay roof design, the number of joists required on the project was reduced by one-third and substantial saving resulted in material, time and labor.

Other Laclede Steels, too, including Multi-Rib Reinforcing Bars and Welded Wire Fabric, were used in this modern new building.



LACLEDE

LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

Droplets of water roll off these new Red Wing boots which are treated with silicone during tanning.

Water-repellent shoes

■ Work shoes treated with Sylflex, a newly developed Dow Corning silicone which makes leather permanently water repellent have been placed on the market by Red Wing Shoe Co., 103 Main St., Red Wing, Minn. The silicone treatment is applied to the leather during tanning, and protects the shoes from rain, mud, and dirt.

Unlike waxes and oils, Sylflex allows the shoes to "breathe" and does not add to their weight.

Made of a high-grade glove leather, the shoes are being offered in two styles: a 6-inch shoe and an 8-inch boot.

For further information write to the company, or use the Request Card at page 18. Circle No. 101.

Custom-built trucks for off-highway hauling

■ The advantages of custom-built heavy-duty Autocar trucks are described in a bulletin available on request. The literature illustrates several different types of Autocar trucks built to order for various construction hauling operations. It is emphasized that the trucks are built to eliminate the weak links that might give way under the stress of off-highway hauling.

Autocar trucks, it is pointed out, are assembled from a wide choice of motors, transmissions, and axles with every vital part selected for its contribution to the performance of the whole unit.

To obtain this literature write to Autocar Division of the White Motor Co., Exton, Pa., or use the Request Card at page 18. Circle No. 36.

Small-diameter augers for earth-boring machines

■ The addition of 6, 7, and 8-inch-diameter heavy-duty flight augers to the Pengo line has been announced by Petersen Engineering Co., Santa Clara, Calif.

These heat-treated manganese moly alloy cast-steel augers are being produced to fill a need for a small-diameter but heavy-duty flight auger for use with earth-boring machines.

For further information write to the company, or use the Request Card at page 18. Circle No. 59.

Truck-mounted backhoe is also loader and crane

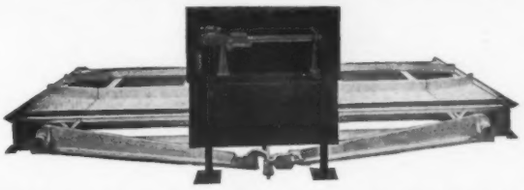
■ The hydraulically-operated Samson digger is shown in literature from Avery Tractor, Inc., West Lebanon, N. Y. The engine-driven excavating machine mounts on a truck to operate as a backhoe, shovel, or crane as needed.

As a backhoe, the Samson digs over 11 feet deep and loads up to an 8-foot height. Bucket capacity is ⅜ cubic yard. The unit also converts to a shovel loader with a 12-foot loading clearance. As a crane, the machine can lift 2,000 pounds to a height of 18 feet.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 31.

WINSLOW—PORTABLE TRUCK SCALE

"THE CONTRACTORS' SPECIAL SCALE"



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacities: 15-18-20-30 tons.

Write us for name of your nearest distributor.

WINSLOW SCALE COMPANY

P. O. Box 1198 Terre Haute, Indiana

STOP costly infiltration...

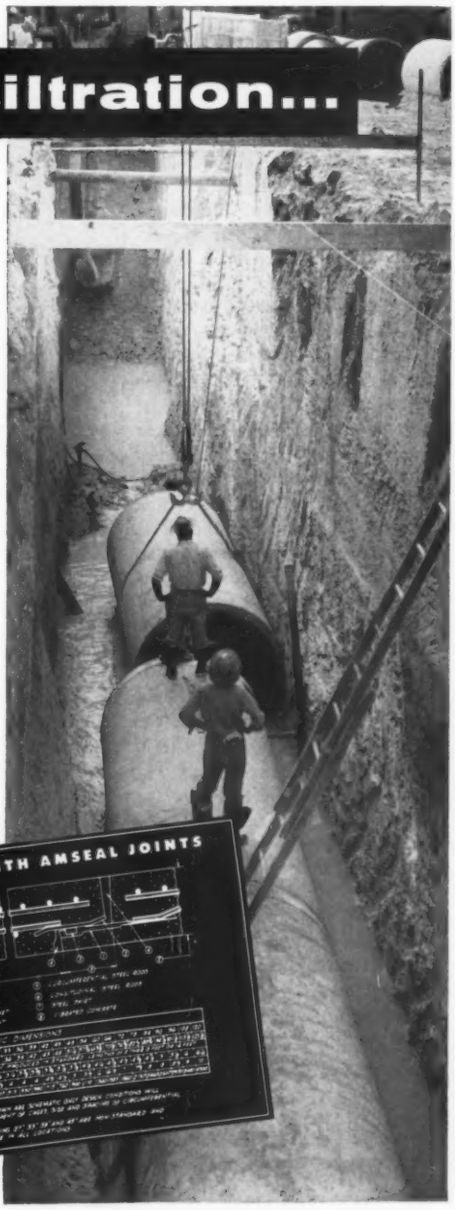
specify

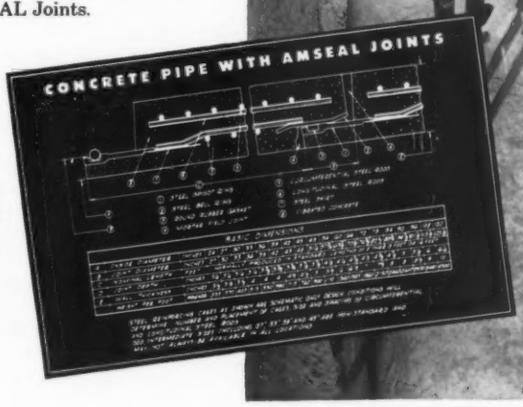
AMSEAL JOINTS

Contractors appreciate the simplicity and economy of installing precast concrete pipe furnished with foolproof AMSEAL Joints—particularly where trench conditions are wet and troublesome. The continuous, round rubber gasket assures a watertight seal against infiltration or leakage. AMSEAL Joints provide the necessary flexibility to permit normal expansion, contraction, deflection and settlement without reducing their effectiveness.

The efficiency and long life of AMSEAL Joints results in *greater economy*—through savings in the construction, operation and maintenance of sewage pumping and treatment facilities. With pipe lengths of 16 feet, there is less joining—less time on the job. Inside surfaces are smooth for maximum capacity.

Write today for specifications on precast concrete pipe with trouble-free AMSEAL Joints.





This "pressure proven joint" is furnished on low pressure concrete pipe for:

- INVERTED SIPHONS
- WATER INTAKE LINES
- INTERCEPTING SEWERS
- OUTFALL SEWER LINES
- SEWAGE FORCE MAINS
- LOW PRESSURE WATER SUPPLY LINES

AMERICAN-MARIETTA COMPANY

CONCRETE PRODUCTS DIVISION

GENERAL OFFICES

AMERICAN-MARIETTA BUILDING, 101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS PHONE: WHITEHALL 4-5600

DIVISIONS AND SUBSIDIARIES

B. C. Concrete Company, Ltd.
Concrete Conduit Company
Concrete Products Co. of America
Lamar Pipe and Tile Company
Lewistown Pipe Company
Universal Concrete Pipe Co.

This Kadco dust-control machine has been redesigned so that it may be more easily towed and to provide more filter area.

Dust-control machines for rock drilling

■ The Kadco line of dust-control units now includes a redesigned model that is lower and wider and therefore more adaptable for mounting on a jumbo-type tractor, air compressor, and drill-rig combination. The new design also offers better visibility and stability, as well as protection to the drill operator.

With a lower center of gravity and a turning radius of only 14 feet, the new Kadco unit is easier to tow. It also contains more dust filterage and storage area.

Kadco dust-control units remove rock dust and chips from the cutting edge of the drill to allow the bit to cut virgin rock entirely rather than to regrind and pulverize accumulated cuttings. With less frequent bit sharpening and changing, and no lost time for "blow-back," downtime is held to a minimum. The machines are also used to prevent silicosis in rock drilling or quarry operations.

The new model is designed for use with either four jackhammers or two wagon drills. The machine now has an external shaker handle so that it is no longer necessary for the operator to reach inside the machine to shake the filter bag for dusting. Three gravity-flow side-dump openings are provided for unloading the accumulated chips and dust.

For further information write to Kadco Corp., 36-40 11th St., Long Island City, N. Y., or use the Request Card at page 18. Circle No. 121.

Southern sales engineer for Foundation Equipment

Serving southern contractors as sales engineer for Foundation Equipment Corp., Long Island City, N. Y., is A. S. Rubin. Mr. Rubin, with headquarters at Fort Pierce, Fla., will cover North Carolina, South Carolina, Georgia, Alabama, and Florida for his firm, which manufactures and rents wellpoint pumping equipment. Previously, Mr. Rubin was sales manager for Marlow Pumps.

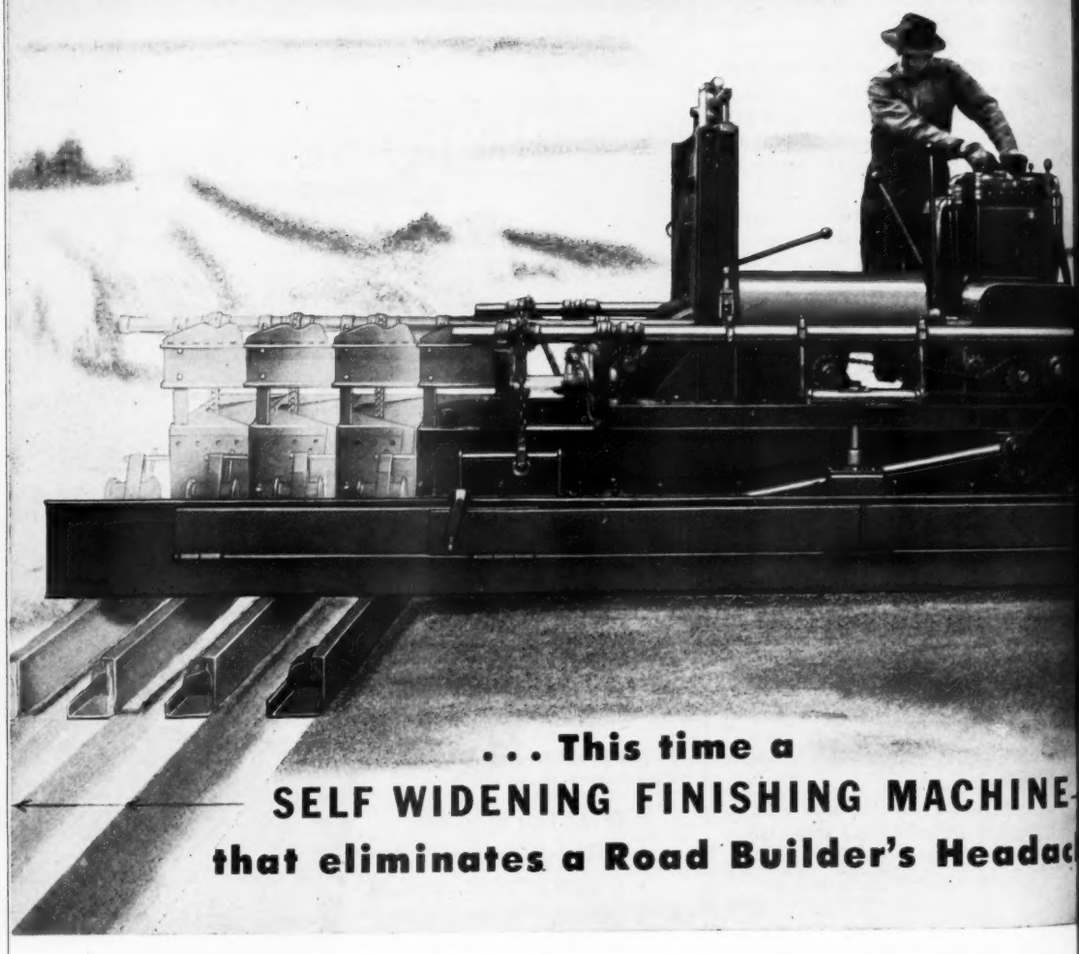
Versatile power trowel

■ A versatile new Mall troweling machine converts to a 26, 36, or 45-inch blade diameter. The unit is powered by either a pneumatic or electric motor, or a two or four-cycle gasoline engine. Any of the power heads will also power a floating disk and grinding-grouting head, and each comes in three interchangeable ring sizes.

Among the machine's features are safety throttle control, a lifting eye, and an automatic recoil starter. A new clamp ring makes it easy to switch to any of the four power heads or to a replacement engine. A planetary-geared transmission is said to deliver 97 per cent of the power directly to the blades. Both edges of the shoes and blades can be used.

For further information write to Mall Tool Co., 7725 S. Chicago Ave., Chicago 19, Ill., or use the Request Card at page 18. Circle No. 88.

It's FLEX-PLANE



. . . This time a
SELF WIDENING FINISHING MACHINE
that eliminates a Road Builder's Headac

Now, for the first time, a mechanical finishing machine will widen with a flick of a finger. What does this mean to road builders? Hundreds of hours saved in finishing interchanges, intersections, passing areas, pull-off areas or wherever the width of a highway varies.

Simply set your forms to follow the actual path of the finished roadway, pour your concrete and the Flex-Plane Self-Widening Finisher will do the rest. It's a completely new idea — *the frame widens — not the wheels.* A specially designed triple-lap frame gives the machine utmost rigidity even when completely expanded.

It's a real work horse that gives the finished roadway greater uniformity, reduces hand labo to an absolute minimum, permits the finish o wide and variable width areas without specia form set-up and pouring operations. It's th greatest innovation in concrete finishing i recent years. Naturally, it can be used as a standard straight-line finisher, and with an extra wide range of widths.

Like so many other cost-reducing develop ments, the self-widening feature is found only

WORLD'S LARGEST BUILDER OF CONCRE

Lightweight generator

■ A new portable 3,500-watt generator reported to be one-third lighter and smaller than conventional models of the same capacity has been announced by Hamden Machine Products, Inc., 44 Kendall St., New Haven, Conn. The Hamco 350-D is a 115 to 230-volt ac 60-cycle unit and will take a starting load of 5,000 watts. Its total weight is only 210 pounds.

Ac and dc circuits filter through a condenser to minimize interference, eliminate sparking of brushes, and prolong brush and commutator life. The end bells of the generator are constructed of aluminum alloy to reduce weight without sacrificing strength. The unit is mounted on aluminum channel.

The 350-D has also been designed for rapid repair, so that brush changes may be made in less than 10 minutes. The unit has a double V-belt drive, shielded ignition system, and drip-proof generator.

For further information write to the company, or use the Request Card that is bound in at page 18 in this issue. Circle No. 2.

The Arizona State Highway Department uses its Scoopmobile for such maintenance jobs as loading trucks with cinders for ice control. The Scoopmobile picks up a load, raises its shovel, and dumps into the truck box backed under the shovel.

Case history

Hydraulic loader saves maintenance man-hours

The Arizona State Highway Department is winning a battle with high maintenance costs with the aid of a Scoopmobile, a versatile rig which handles small quantities of material at high speed and eliminates a great deal of hand work.

The efficiency of maintenance crews has been increased, while costs have been drastically lowered, by the many applications of this 1-yard hydraulic loader. Snow removal, ice control, bituminous patching, excavation along sloughing cut slopes, repair of frost damage, maintenance of openings in cattle guards along ranch roads, and replenishment of bituminous patch stockpiles are some of the jobs the Scoopmobile does easily and quickly.

The maintenance of cattle guards was a particularly tedious hand job for highway department crews before the Scoopmobile was purchased. Removing ice and packed snow from between the rails of these guards is done in 10 minutes with the rig, whereas it formerly took two men an hour to do the job with shovels.

This replacing of hand labor with a versatile machine has freed maintenance men for other jobs, thereby increasing efficiency and lowering costs for the highway department.

New service manual for tractor equipment

■ A new service manual on factory-approved maintenance tools for ATC Terractrac tractors is now available from Owatonna Tool Co., 381 N. Cedar St., Owatonna, Minn.

Bulletin AM-55 shows both manually-operated and hydraulic OTC equipment for removing and installing gears, bearings, and sprockets on American Tractor Equipment.

In addition, the manual contains illustrations and listings of the components of several new manual and hydraulic tool sets that OTC has developed to handle the various service jobs illustrated.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 38.

A typical turnpike interchange

The above sketch represents a typical turnpike interchange. The darkened areas indicate roadway of variable width where the Flex-Plane *Self-Widening* feature would save dozens of man hours. The same machine, of course, would be used as a fixed width finisher for those sections where the slab is of uniform width.

Flex-Plane Finishing Equipment. In fact, it's
is kind of forward thinking that has made
lex-Plane the world's largest producer of con-
ete finishing machines. And it's the reason
y you should talk with Flex-Plane before
ying finishing equipment of any kind.

THE FLEXIBLE ROAD JOINT MACHINE COMPANY
WARREN, OHIO

The Flexible Road Joint Machine Co.
5100 Thomas Rd. Warren, Ohio

Please send me latest information on the Flex-Plane Concrete Finishing Machine Line.

Name .....
Title ..... Company .....
Address .....
City ..... State .....

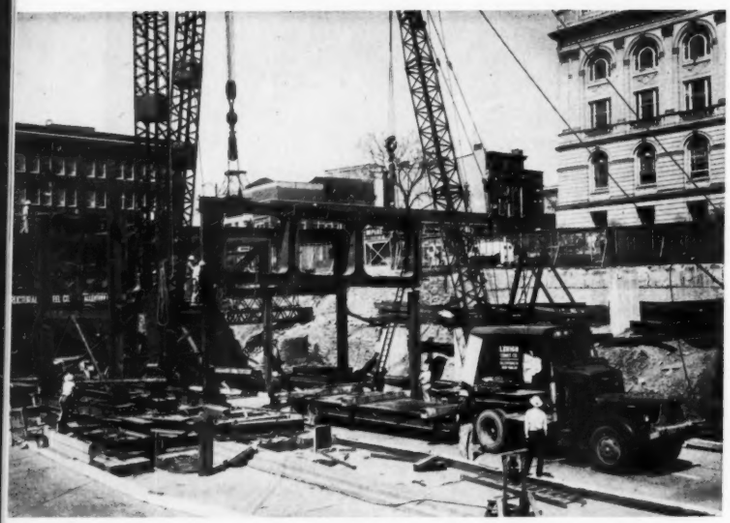
NISHING EQUIPMENT

MATERIALS

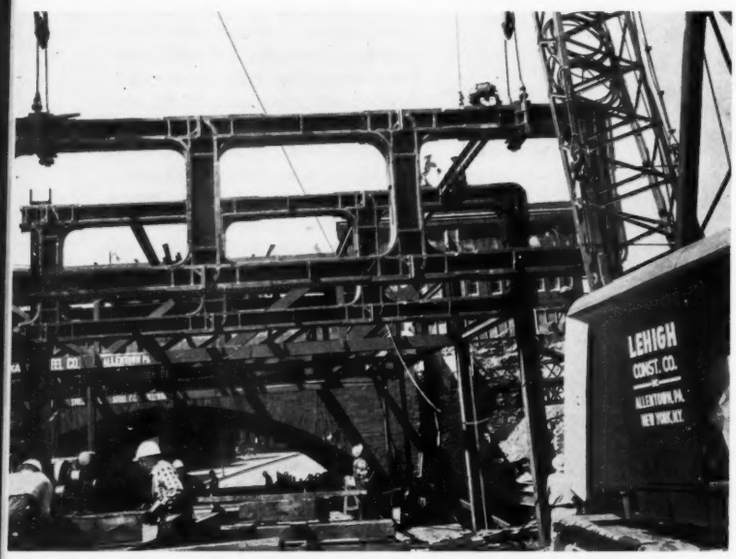
Vierendeel trusses support library built over highway

Heavy structural-steel members span depressed roadway which, in turn, is built over twin conduit carrying river

by ANTHONY N. MAVROUDIS, field editor



A guy derrick and a Manitowoc 3000 B crane lift a 42-foot-long section of Vierendeel truss into position spanning a building column and the falsework tower at left. This section weighs approximately 40 tons.
C&E Staff Photos

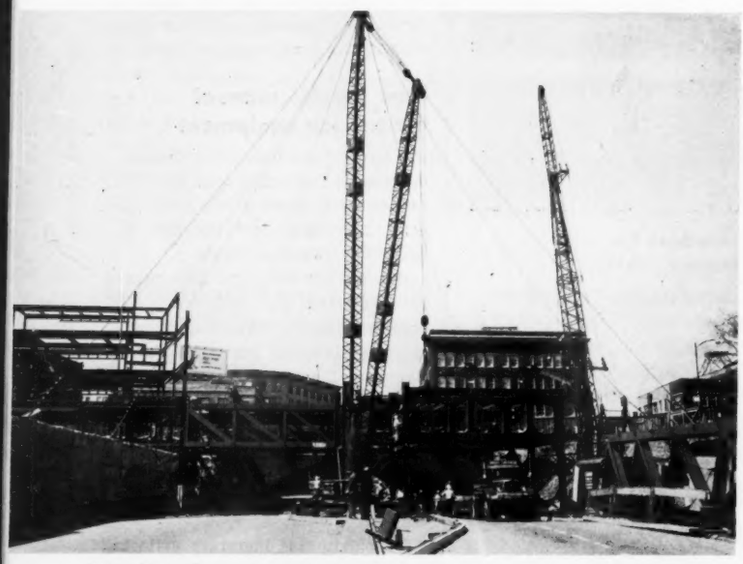


With the derrick and crane still supporting the Vierendeel section in the foreground, Lehigh steel workers connect a beam reaching to a similar truss section behind. Access to the library will be from the stone arch bridge, background, carrying Hartford's Main Street, over the depressed highway.

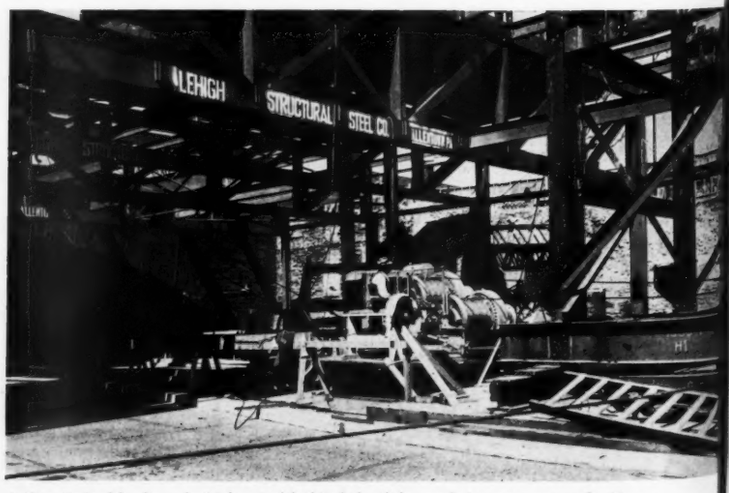
Unusual structural-steel composition is one of the features of a new public library being built over a depressed six-lane highway in downtown Hartford, Conn. Supporting steelwork which will carry the four-story building over the highway consists of five Vierendeel trusses—two of which are believed to be the largest and heaviest of this type of member fabricated and erected in the United States.

The all-welded structural steel building will front on an existing stone arch bridge carrying Main Street over Whitehead Highway, thus providing access to the library.

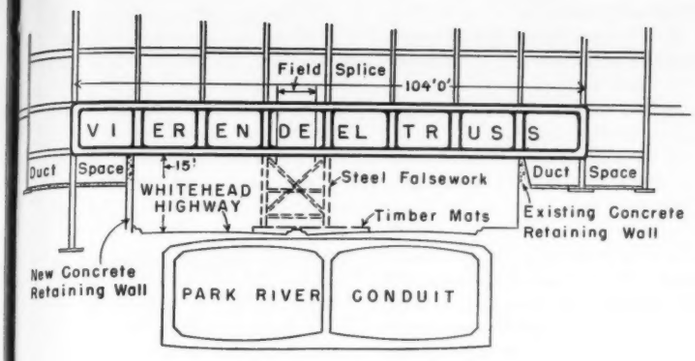
The Wadhams & May Co., Hartford, is the general contractor for the $1,980,000 project. Lehigh Construction Co., a subsidiary of Lehigh Structural Steel Co., Allentown, Pa., is subcontractor for the steelwork. Steel erection was begun last March 28,



This photo of erection work shows how the library structure will span the depressed six-lane highway. The falsework tower (center) over the median strip on the highway will be removed after the Vierendeels are fixed in place.



A Skagit double-drum hoist located behind the falsework tower powers the Boom & Crane Corp. guy derrick assisting with erection work. Conventional trusses to support the entrance patio for the library are visible above.



and is expected to be completed by the end of this month.

Completion of the library building will add a third level of construction to the site. The depressed highway spanned by the library is itself built over a twin conduit which carries the flow of a river. Maintenance of traffic on the highway and preservation of the conduit called for some ingenious equipment placement during erection work.

Vierendeel trusses were selected to support the library over the highway because the open spaces provided by their design will allow for more book-storage space in the library basement. If conventional trusses having diagonal members had been used, an additional floor would have been required; use of the Vierendeels allows maximum utilization of space in and around the trusses. It is estimated that an additional 280,000 volumes can be placed in the basement by using these structural members.

(The Vierendeel truss is named after Prof. Arthur Vierendeel, who, while at the University of Louvain in Belgium, devised it in 1893 for the high steeple of the church at Dadizeele in Flanders.)

Support columns for the Vierendeel trusses rise on either side of the six-lane highway. A patio, supported by four conventional trusses, will provide access to the library from Main Street on the adjacent arch bridge. The portion of the four-story building spanning the highway will be supported by the five 13-foot-deep Vierendeel trusses, with the lower chord supporting the basement floor and the top chord, the first floor. The two largest and heaviest Vierendeels each have eight panels in a 104-foot span, and weigh 94 tons. The remaining three trusses, two weighing 73 tons and one 53 tons, have seven panels in a 91-foot span. For the rear wall of the library basement, a conventional support truss will be placed, since that space cannot be used for book storage.

Erection of Vierendeels

The Vierendeels were erected in three sections and field-spliced a little off mid-span. During the erection of the longest trusses, one section with a length of 42 feet was positioned so as to span a building column resting on bedrock and a temporary erection tower located along the median strip of the highway. A second section of the truss, about 52 feet long, was erected in a similar manner on the other end. The upper and lower chords of the truss were then field-spliced with a 10-foot segment. The 42-foot section weighed approximately 40 tons, while the 52-foot section weighed 50 tons—about one ton per linear foot of truss.

The prefabricated sections of the Vierendeels were shipped by rail from Lehigh Structural Steel Co.'s plant at Allentown to Hartford, then trucked to the job site on low-beds. Because of the length, excessive bulk, and weight of the members, much detailed planning was necessary in order to ship the units in conformity with regulations and safety requirements. Each truss half-section was laid flat on a flatcar for shipping, whereas a conventional truss is normally shipped in an upright position. The trusses were again placed flat on the low-bed trailers for hauling to the site, as there was limited vertical clearance under the previously erected steel. Special lifting devices were used to roll the truss sections to a vertical position for the final lift.

These Vierendeel trusses alone required 44 miles of deposited weld metal during fabrication in Allentown and in the field.

Equipment placement

Lehigh Construction Co. used a 35-

ELIMINATING STREAM POLLUTION FOR A GREATER AMERICA

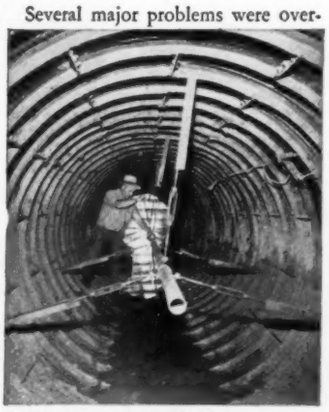
LOOKING DOWN vertical shaft to tunnel driven 33 feet under six-lane highway. Unaffected by weather conditions, men work around the clock in tunnel headings. Steel plates line shaft and tunnels, protecting men against cave-in.

MINING IN TUNNEL progresses close to pay line. When 4 square feet of ground is exposed, man bolts next plate into ring.

How COMMERCIAL tunnel liner plates are a time and money saving answer in soft ground tunnel construction. . .

RAPID PROGRESS is being made in driving 8400 feet of tunnel at depths as low as 33 feet below the surface by Mountain State Construction Company for the Sanitary Board of the City of Charleston, W. Va. Tunnels 84" and 68¾" in diameter, when completed later this year, will become part of the project that will intercept and pick up existing sewage lines now dumping into the Kanawha and Elk Rivers and divert the flow of all raw sewage to a new disposal plant now under construction.

Several major problems were overcome when consulting engineers decided, and the contractor agreed, that the steel tunnel liner plate system was the ideal method to use in driving these tunnels. I.V. Cunningham, Owner of Mountain State, says that he is using 2,000,000 pounds of COMMERCIAL steel liner plates because simplicity of the COMMERCIAL system makes rapid progress possible even though tunnels are being driven close to the river in wet ground where cave-ins are a constant hazard and beneath Kanawha Boulevard where traffic continues uninterrupted on one of Charleston's busiest arteries.



CHECKING ALIGNMENT, Vernon Cunningham says, "Once the first few feet of tunnel liner plates are in place, the remaining rings are practically self-aligning." LA-14

Setting the proper ground support quickly as mining progresses in the heading of a soft ground tunnel is of utmost importance. COMMERCIAL liner plates are curved to the exact required radius and because of their size, weight and design, one man can easily and quickly set them into place. Bolts are slipped through matching holes punched in the four inside flanges of the plates and nuts tighten up quickly with the use of only a spud wrench. There is nothing awkward in bolting the COMMERCIAL plate into place because everything is out in the open and you see just what you are doing.

Starting this contract with unskilled workmen, Mountain State has found that it worked out perfectly to let their men learn the COMMERCIAL liner plate system on the job, and in short order the crews performed as teams. With actual physical labor reduced to a minimum and the fear of cave-in hazards negated, Vernon Cunningham says, "They are happier workers than any I have seen in all my years in the construction business. This, of course, pays off in results. For my own part, I have found the COMMERCIAL liners a time and money saving answer to a difficult construction problem."

REMOVING MUCK from heading places additional load of 1500 pounds on monorail system suspended from steel liner plate lining.

Can we be of assistance to you on your next tunnel job? There's no obligation.

THE COMMERCIAL SHEARING AND STAMPING COMPANY
Youngstown, Ohio Chicago, Illinois Salt Lake City, Utah

COMMERCIAL
shearing and stamping

ton guy derrick with 100-foot mast and 90-foot boom, and a 50-ton Manitowoc 3000-B crane with 70-foot boom and 30-foot jib, for erection of the steel. The derrick, made by Boom & Crane Corp. of New York City and powered by a Skagit double-drum hoist, and the erection tower used for mid-span support were placed on steel grillage beams and 10×10-inch timbers which straddled the median strip of the highway. The crane was located off the roadway during the steel erection.

This arrangement of equipment was necessary because at no time could the loading on the highway exceed an H20 AASHO design load. Great care, preceded by detailed planning, was called for during erection operations, since the Whitehead Highway is built above a concrete twin conduit, through which a river flows. During the erection stage, between the hours of 9 a.m. and 3 p.m., traffic on the Whitehead Highway is being rerouted onto marginal streets skirting the highway. After 3 p.m., two lanes in each direction are opened on the highway.

The reinforced-concrete conduit consists of two channels, each 19 feet 4 inches high by 30-feet wide, with the dividing wall, bottom, and the roof only 1½ feet thick. Side walls on the conduit are 2½ feet thick. The arch bridge which is being connected to the library structure was the longest stone arch bridge in the world when built in 1832. It carried Main Street over the free-flowing river, then known as Park River. After a number of floods raised the level of the river to the point where it endangered surrounding property in downtown Hartford, city officials decided that the river flow should be restricted, and the twin conduit was built. Later, the Whitehead Highway was built over the conduit without disturbing the arch bridge.

Roof truss erection

Another unusual feature of the steel erection is the placing of the roof trusses. In addition to the five conventional and five Vierendeel trusses for the patio, basement, and first floor, another five conventional trusses are required for the roof. These members are the same length as the Vierendeels and will have up to two field splices made in the erected position. They are supported by side building columns resting on the top chord, just above the end post, of the Vierendeel trusses. The end posts of the Vierendeels serve as a section of the building columns and will transmit the end reaction to the column below through bearing.

Since the design of the building does not allow columns between the top chord of the Vierendeels and the second-floor, the problem arose of how to support the roof trusses until they were field-spliced. Lehigh solved the problem with the following three-step plan:

1. Temporary columns were to be erected on the completed Vierendeels to give support to the second-floor steel. At this point the steel falsework which supported the Vierendeels until they were field-spliced would be removed.

2. With this support, the second and third-floor steel could be easily placed. This would be accomplished by jumping the guy derrick onto the top chords of the Vierendeels.

3. The roof-truss sections could then be erected by the derrick and field-spliced in position.

With the roof trusses completed, it will be a simple matter to burn out the temporary columns, erected in step 1, with an acetylene torch. Loads on the second and third floors will be transmitted upward to the roof trusses through the floor columns. The loads will eventually be transmitted to the end posts of the Vierendeels by means of the side building columns supporting the roof trusses. Columns supporting the Vierendeels are 14-inch wide-flange 319-pound members.

All the first and basement-floor loads will be supported by the Vierendeels alone and will be transmitted to bedrock through building columns supporting the Vierendeels.

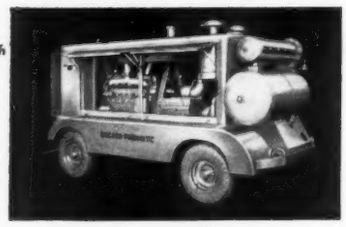
All the steel erection is handled by the derrick and the Manitowoc crane. A Murphy 125-kw diesel generator provides the power for ten welding units used for steel-fabrication work on the job. The ten units consist of five Lincoln MG 400-amp sets and five A. O. Smith 400-amp rectifiers. Two butt welds, one 4⅜ inches thick in a plate 22 inches long, the other 3⅞ inches thick in a plate 25 inches wide, are the largest welds in the Vierendeels.

Personnel

Frank Fevier is superintendent and Don Lonergan erection engineer for the Lehigh Construction Co. Arthur W. Swanson is superintendent for the general contractor, The Wadhams & May Co. The architectural firm which designed the unusual structure is Schultz & Goodwin, Hartford. Daniel Tasillo is the supervising architect for the city of Hartford. THE END

Petersen Engineering news

The new works manager of the Petersen Engineering Co., Santa Clara, Calif., is Robert W. Goode. Before joining the company, manufacturer of earth-boring equipment, Mr. Goode was general foreman of the BE-GE Manufacturing Co.

CP "Power Vane" Rotary Compressors are available with  Hercules gasoline engines in capacities of

Here's a pipeline rig that's

New line of axles for off-road equipment

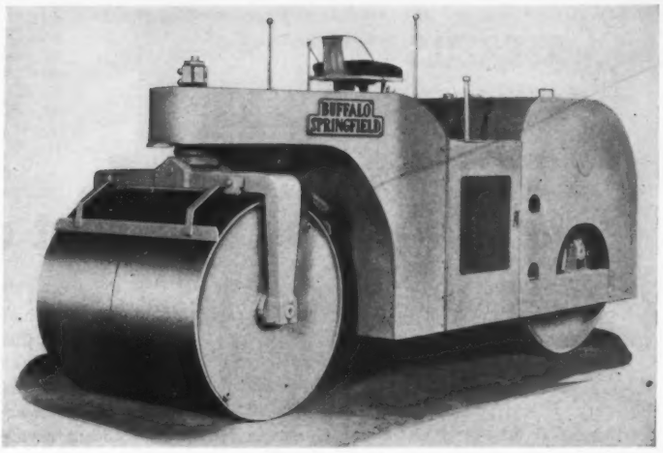
■ A new line of planetary-drive and drive-steer axles for heavy-duty four-wheel-drive equipment such as graders and scrapers has been announced by Clark Equipment Co.'s axle division, Buchanan, Mich.

The drive-steer axle is now being produced in 11,000, 17,000, and 20,000-pound capacities. Of similar design, the companion line of drive axles is available in 16,000, 17,000, 24,000, and 30,000-pound capacities. By replacing the conventional differential carrier with a through-drive type, the smaller axles in this line can be converted into tandem units.

Use of the planetary type of drive at the wheel end of the axles puts the final power multiplication as close as possible to the point of application. It makes possible a substantial size reduction at the steering joint, axles, shafts, and differential without sacrificing structural strength.

Other advantages claimed for these planetary-drive axles include elimination of torsional wind-up in the drive shaft and surging in the vehicle. There is also added operational safety because of the low torque load on the differential, ring gear, pinion, and drive shaft. The secondary reduction assembly is readily accessible for maintenance, which is also simplified because of the lighter construction.

For further information write to the company, or use the Request Card at page 18. Circle No. 106.



The new Buffalo-Springfield tandem rollers feature a torque-converter drive. They also have a rugged bevel-gear final drive found on B-S heavy-duty models.

Tandem rollers have torque-converter drive for smoother operation

■ The Buffalo-Springfield Roller Co., Springfield, Ohio, has introduced a new series of 8 to 12 and 10 to 14-ton tandem rollers. The new standard model tandems will supplement the company's heavy-duty line of compacting equipment.

An outstanding new feature of the standard tandems is their ability to match power and speed automatically to grade and material variations through the use of a torque-converter drive. Also preventing engine lugging during heavy starts or sudden load increases, the torque converter permits engine operation within the governed range at peak power and efficiency. In addition, shock loads and torsional variations are absorbed.

The torque-converter drive makes it possible to maintain a constant speed at any point from 1 to 5 mph. Shifting is eliminated so that the operator may concentrate on the operation of the roller.

The new standard models also have Buffalo-Springfield's bevel-gear final drive, which has been standard equipment on the heavy-duty models for many years. Advantages claimed for this unit include lower tooth bearing pressures, easy adjustment when needed to eliminate back lash, and lower maintenance costs.

A heavy-duty industrial engine powering the Standard rollers develops ample torque over a wide operating range to accommodate all grade and material conditions. The roller's all-welded frame is jig-assembled and heavily reinforced for rigidity. The control panel has been designed to simplify the operator's job.

For further information write to the company, or use the Request Card at page 18. Circle No. 14.

Cleaver-Brooks appoints

The general manager of manufacturing for Cleaver-Brooks Co., Milwaukee, Wis., Elmer H. Wegner, has been promoted to vice president of manufacturing for the company. Mr. Wegner joined the manufacturer of bituminous heating equipment and other construction products in 1953.

125 and 210 cfm; and General Motors diesel engines in capacities of 210, 365, 600 and 900 cfm.

going places

Now you can have a completely mobile ditching rig in one self-contained unit! It's a dependable CP "Power Vane" Rotary Compressor and GTD-300 Trenchdril combined with your own side boom tractor. The complete portability and rugged design features of the CP Rotary plus the powerful feed and strong rotation of the Trenchdril make a powerful drilling combination when the going gets tough. For details write, *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.*

Here's the complete unit in operation!
The CP Rotary Compressor operates at peak efficiency even during off-level operation.

Chicago Pneumatic

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

MATERIALS

Steel goes up fast on 18-story building as

High-strength bolts cut cost, labor, equipment, noise

An 18-story apartment building just recently served as a proving ground for the use of high-strength bolts in building construction in New York City. The steel framework for the new skyscraper, at Park Avenue and 36th Street, is tied together with 35,000 of these fasteners. According to the owner and builder, Anthony Campagna & Sons of New York City, a secure bolted job is as good as a riveted job. Grand Iron Works, Inc., New York, N. Y., steel fabricator and erector, reported significant savings in erection—the joining costs only 60 per cent of its estimate for rivets.

The city's Department of Housing and Building approved this first use of high-strength bolts in tall building construction, and amendments to the building code are now pending to permit their more widespread application. Most of the bolts are ⅞-inch in diameter, and a small number and ¾-inch in diameter. Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y., supplied the bolts. The structural assembly was completed in less than three months, several weeks faster than with conventional construction.

While the cost of a high-strength

Some 35,000 high-strength bolts, supplied by Russell, Burdsall & Ward, are going into the steel framework of this 18-story Park Avenue apartment building in New York City.

KEEP THEM ROLLING

...IN MUD SNOW OR SAND

WITH *all-weather* TRUCK TRACKS

Beat the *Mud* and *Snow* and *Sand*... mount TRUCK TRACKS on your rolling equipment. TRUCK TRACKS can eliminate seasonal shutdowns on the job by adding *tractor performance* to your trucks.

Drivers mount TRUCK TRACKS in 10 minutes time; remove them in less. Adjustments are simple and easy to make. Nothing to break, bend or loosen...maintenance is negligible.

PROMPT SHIPMENT. Order your TRUCK TRACKS from your equipment dealer, or fill in the coupon and rush it to us. Shipment can be made the same day your order is received.

VERSATILE

Super traction for *single* as well as *tandem axle trucks*. SIZES AVAILABLE FOR ALL HEAVY-DUTY SINGLE AND DUAL TIRES.

The unusually low price of TRUCK TRACKS puts them within the reach of every truck owner... *If you're bogged down, contact your local dealer or call, wire or write us!*

Phone: TUxedo 5197
Cable Address: PANDGCO

...DEALER INQUIRIES INVITED

TRUCK TRACKS NOW USED ON...

Quick-Way Shovels and Cranes • Gradalls • P & H Cranes • Lorain Moto-Cranes • Schield-Bantam Shovels and Cranes • Northwest Cranes • Hyster Fork Lifts • Unit Crane • Mandt Swing Loader • Wayne Cranes • Byers Shovels and Cranes • Little Giant Shovels and Cranes • Drilling Rigs, Tractors, and Many Other Truck-Mounted Shovels and Cranes.

P&G SUPPLY CO.
2262 North Albina
PORTLAND 12, OREGON

P&G SUPPLY CO., 2262 N. Albina, Portland 12, Oregon Dept. 2 F
Gentlemen: Please rush complete TRUCK TRACK details and prices for:

SINGLE AXLE: ☐ Single Tire ____ x ____ (Size) ☐ Dual Tire ____ x ____ (Size)

TANDEM AXLE: ☐ Single Tire ____ x ____ ____ (inches) Center-to-Center Axle Spacing

☐ Dual Tires ____ x ____ ____ (inches) Center-to-Center Axle Spacing

Name ____

Address ____

City ____ Zone ____ State ____

My Local Equipment Dealer is: ____

CONSOLIDATED CUTS COSTS WITH CARBIDE

CARBIDE* DIAMOND SAW BLADES
FOR
CUTTING CONCRETE
* PATENT PENDING
ORIGINATED BY
CONSOLIDATED DIAMOND TOOL CORPORATION
320 YONKERS AVENUE YONKERS 2, NEW YORK

A two-man bolting crew makes a field connection on a beam. A Chicago Pneumatic impact wrench, which tightens up the bolt, is backed by a holding wrench behind the beam.

An inspector approves a column splice as the Torqometer indicates that the specified tension for loading requirements has been met.

bolt—about 25 to 35 cents—is considerably higher than that of a rivet, the labor cost of assembling a bolt in the field is much less than driving a rivet. And bolt assembling, faster than rivet driving, can also be done by iron workers with little training. A riveting crew requires considerable training to master the technique of tossing, catching, inserting, bucking, and driving the red-hot rivets.

Bolting it up

The contractor employed only six to eight men for the bolting. Equipment included three impact wrenches, Ingersoll-Rand, Thor, Chicago Pneumatic, driven by a CP 350-cfm compressor working in the street. A crew of two men worked with one pneumatic wrench and one holding wrench, alternating the tools between them. This compares with the customary four-man riveting crew using forge, tongs, cone, airjack or dolly bar, and a riveting gun or hammer.

While rivets were used for shop connections, only bolts were used for all field connections. Fitting up bolts to hold structural members in place prior to riveting was obviously unnecessary. The RB & W high-tensile-strength bolts are made of 1038 carbon steel which is heated, quenched, and drawn. The two-man crews installed carburized washers under both heads and nuts, to permit generation of the high torque required without scoring the connected material.

According to tests made at the site, the noise of bolting is only 42 per cent (decibel rating) of the noise of riveting. This less-noise factor was particularly appreciated along New York City's swank Park Avenue.

Independent inspection

Since bolting is an innovation in New York City, the contractor was required to provide double inspection of the structural joints by both the consultant and an independent agent. The New York Testing Laboratories, Inc., served in the latter capacity, using a Torqometer in its field inspections. This indicating torque wrench, calibrated daily at the laboratory, checked a portion of the bolts on each joint for proper tension. A 15

(Concluded on next page)

LOAD..MOVE..and FILL at LOWER COST

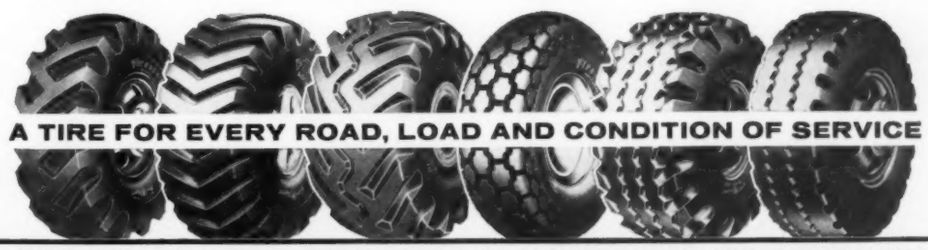
with Firestone NYLON TIRES

FIRESTONE Nylon Off-The-Highway Tires are built to move more loads at lower cost. For any tough operation . . . earth moving, strip mining or rock work, Firestone has a nylon tire that will cut downtime and maintenance costs and keep men and equipment on the job.

It costs you less to run on Firestone Nylon Tires because the treads give maximum traction and they are extra tough to resist cutting. The sidewalls are double thick to give added protection against cuts and snags. The new Firestone Safety-Tensioned Gum-Dipped* nylon cord body gives the greatest protection against impact breaks . . . flex breaks . . . heat failures . . . and water damage.

Your Firestone Dealer or Store can show you how Firestone Nylon Tires will cut your tire costs.

*T.M. Reg. U.S. Pat. Off.



A TIRE FOR EVERY ROAD, LOAD AND CONDITION OF SERVICE

GROUND GRIP • ROCK GRIP • TRACTION ROCK • ALL NON-SKID • ALL TRACTION • RIB EXCAVATOR

When you buy new equipment or replacement tires, specify Firestone

Enjoy the Voice of Firestone on radio or television every Monday evening over ABC

Copyright 1955, The Firestone Tire & Rubber Co.

(Continued from preceding page)

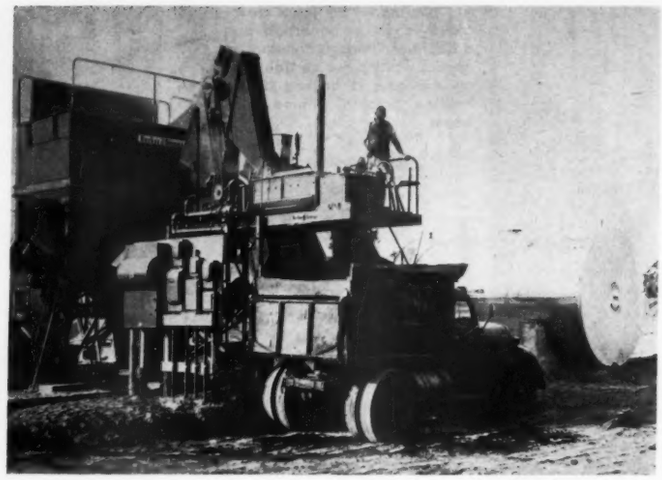
per cent sampling is standard, compared with 100 per cent testing of rivets the day after they are driven.

The inspectors turned up less than 2 per cent rejects on the bolts tested, and these required tightening only. When a rivet is rejected it must be cut out and redriven, a costly and time-consuming task.

Personnel

M. J. Friedman is superintendent for Anthony Campagna & Sons, the builders. S. D. Kapelsohn is chief engineer for Grand Iron Works, Inc., fabricator and erector. Sylvan Bien of New York City is the architect.

THE END



The new Barber-Greene Model 840-B asphalt plant is designed to offer unusual operating versatility.

Versatility is feature of new asphalt plant

■ A new Barber-Greene 20 to 50-ton-per-hour asphalt plant is reported to offer the versatility of larger plants. In making this claim, the manufacturer cites particularly the mixer features found in the new Model 840-B asphalt plant series.

For the production of stabilized mixes, the pugmill section of the mixer may be obtained alone and mounted permanently. However, if portability is desired, the complete mixer, with rubber-tire mounting and adjustable jack-legs, may be used.

For emulsions, or other cold-mix bituminous materials, or for stabilization work where accurate proportioning of aggregate and binder is desired, the mixer may be fed from a portable hopper-feeder-elevator unit. In this setup, the hopper is fed by a conveyor, a crane, or a front-end loader. The apron feeder in the hopper is equipped with an adjustable, calibrated gate. It is mechanically interlocked with the asphalt pump on the mixer for positive and consistent proportioning of the ingredients. Capacities in this setup often exceed 50 tons per hour.

For the production of hot mixes, a portable dryer can be added to the same mixer-hopper combination. Two available Barber-Greene dryers deliver 10 to 25 and 30 to 45 tons per hour. Both are equipped with built-in dust collector cones and also with bucket elevators for feeding the dryer and for discharge to the mixer.

When two or three-bin screening and separation of the aggregate sizes is required after drying, a Barber-Greene portable gradation-control unit may be used between the dryer and the mixer, with the single-aggregate hopper and feeder removed. Each bin of the gradation control unit is equipped with a separate, adjustable, calibrated gate, and once the aggregate proportions have been established, each gate is set and locked so that the mix proportions remain constant. A fourth bin may also be added if needed. Capacities in this multiple-aggregate setup reach 40 tons per hour.

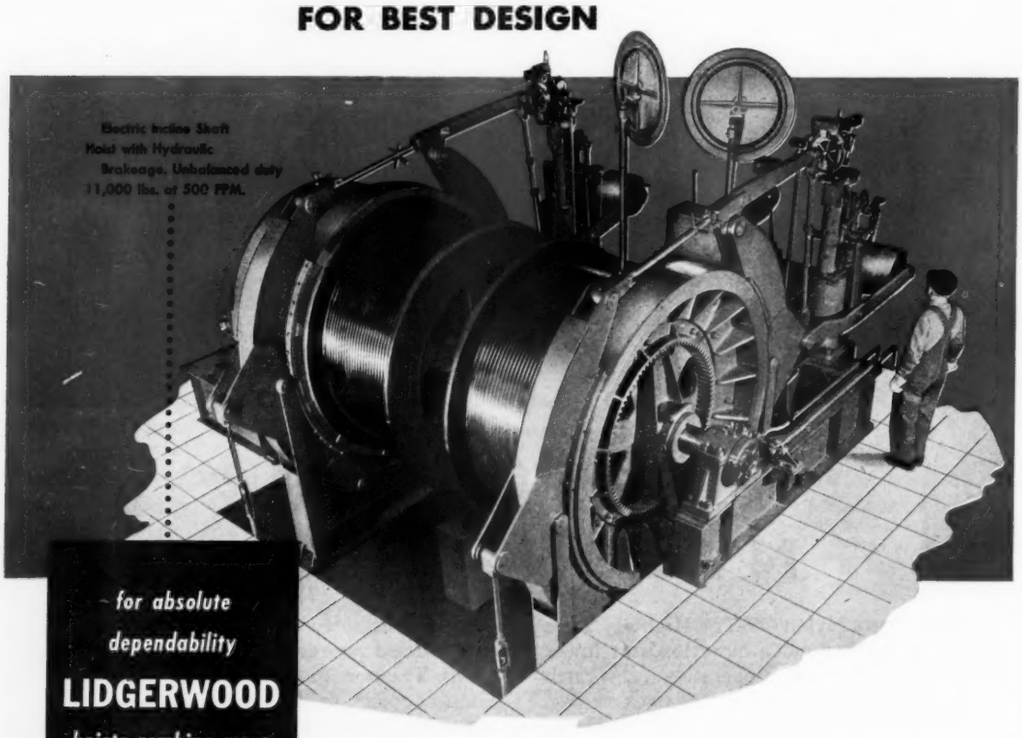
Complete cold aggregate feed systems available include portable 2, 3, and 4-bin hopper units. Each hopper is equipped with a separate adjustable gate. Also offered are stationary 2-bin hoppers and 2-compartment bulkhead feeders of similar design.

For further information write to Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 145.

WHEN BUYING A *Hoist* REMEMBER . . .

BULK AND WEIGHT ARE NOT THE CRITERIA

FOR BEST DESIGN



for absolute dependability

LIDGERWOOD *hoists combine more*

STRENGTH

UTILITY

SAFETY

with less bulk and weight

For over twenty years welded steel drums have been a feature of LIDGERWOOD design. Because of the consequent saving in bulk and weight, as compared with cast construction, the balance of the hoist can be made more compact and considerably lighter, with no sacrifice of strength, safety or utility.

WRITE FOR BULLETINS AND CATALOGS

Superior–Lidgerwood–Mundy Corporation

MAIN OFFICE AND WORKS – SUPERIOR, WISCONSIN

NEW YORK OFFICE – 7 Dey St., New York 7, N. Y.

Continuing a trend toward standardized and simple batching equipment, this new Simplex bin and batcher is designed so that only a few pieces are assembled in erecting.

New bin and batcher is easy to erect

■ As a further step in its policy of standardizing and simplifying its bin and batching equipment, Construction Machinery Sales Co., Waterloo, Iowa, introduces the new Simplex combination. Available in 47 or 97-ton capacities, the new equipment is offered with two, three, or four compartments and with or without separate cement compartments.

The standardized and compact bins for central plants and other installations have been designed with several advantages. There are only a few pieces, including interchangeable legs, to assemble. The units are equipped with radial aggregate-charging gates, dual rubber-pinch cement-charging gates, and combination clam and rubber-pinch discharge gates.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 11.

Highway mower designed for lower upkeep cost

■ A booklet tracing the development of highway mowing machines is available from Triumph Machinery Co., Hackettstown, N. J. The chief problem that manufacturers have been called upon to solve, according to the literature, has been the excessive cost of keeping mowers in repair. By the late '40's the problem of highway litter had reached such proportions that some states were spending $300 to $600 per mower per year for maintenance.

The literature states that the Triumph Hydro-Clipper mower was designed with this problem in mind. It gives details on how the hydraulic-drive machine was built with a simplified design, for easier operation, and for high-speed cutting. At the same time it can be operated with lower repair costs, the manufacturer claims.

Built to function with conventional hydraulic loader systems, the Hydro-Clipper makes loader-mower combinations practical.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 162.

Literature on trailers equipped as field offices

■ Literature available on request describes the International line of field-office trailers. The line includes 28, 30, and 35-foot models. Contractors may purchase the shell alone or the shell equipped as an office with or without a lavatory.

The shells include oil heater, screened windows and doors, complete wiring system, floor covering, and fluorescent lighting.

As offices, the trailer shells are equipped with a private office in the rear, complete with desk, overhead cabinets, and heated floor. The forward end of the trailer is partitioned off with a sliding door and contains a 27,000-Btu heater. Also included is a closet, drafting table, plan rack, and a desk across the front with overhead cabinets.

Lavatory facilities include a flush toilet, built-in wash basin with automatic electric hot-water heater, tileboard walls, and window ventilator.

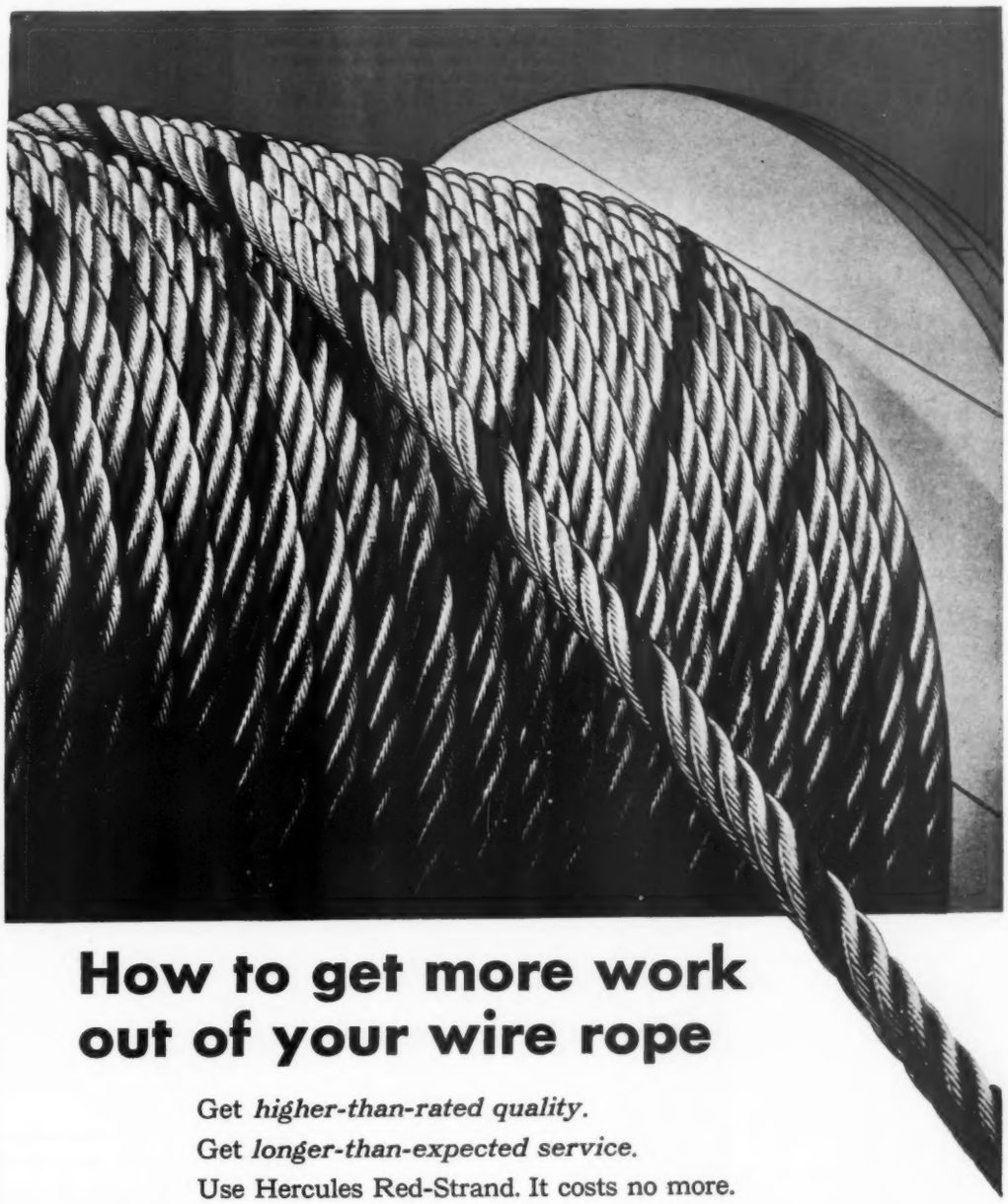
To obtain this literature write to International Trailer Co., Inc., 5712 Erdman Ave., Baltimore 5, Md., or use the Request Card at page 18. Circle No. 163.

Tubular electric heater for asphalt tanks

■ A tubular electric heater suitable for heating asphalt storage tanks is described in a folder from Hynes Electric Heating Division, Turbine Equipment Co., Mountainside, N. J. Illustrations show details of the Hynes electric heating element, which consists of a resistor, insulated supports, and terminals for connecting the resistor to electric power. The complete assembly may be removed from the pipe enclosure through the terminal box without disconnecting fluid lines or conduit.

It is pointed out that in contrast to steam-heating systems, the Hynes tubular electric heater is self-contained. It does not require valves, traps, or condensate disposal. The heaters can be supplied for any available voltage or phase of power supply.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 78.



How to get more work out of your wire rope

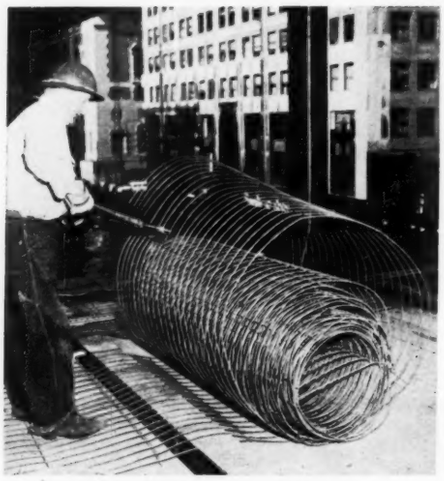
Get *higher-than-rated quality.*
Get *longer-than-expected service.*
Use Hercules Red-Strand. It costs no more.

LESCHEN
HERCULES Red-Strand®
WIRE ROPE
HKP

from leading distributors

LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.
St. Louis 12, Missouri

Buy U. S. Defense Bonds

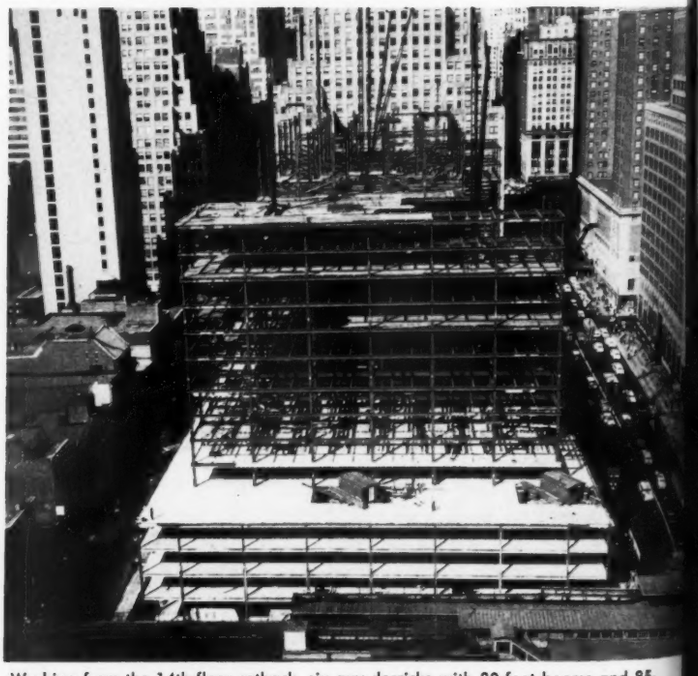


Concrete work is ready to begin on one of the upper floors as forms are set in place.

After a workman (pictured at left) cuts off the welded wire fabric, others (right) stretch it out.

At this level, the concrete floor is in place. Concrete work is not more than eight floors behind steel erection. *C&E Staff Photo*

Lightweight steel panels will sheathe skyscrapers



Working from the 14th-floor setback, six guy derricks with 80-foot booms and 85-foot masts erect 15th-floor steel. Two guys and a stiffleg will raise steel from the 15th floor to the roof. *C&E Staff Photo*

A sketch of the 42-story Socony-Vacuum building, as it will look when sheathed with 750,000 pounds of stainless steel paneling. Windows—numbering about 3,200—will be pivoted on a vertical axis to permit cleaning from inside.

Corrosion-resistant units will be easy to maintain; wire fabric reinforces lightweight concrete floor

Stainless steel panel sheathing will be one of the unique features of the 42-story Socony-Vacuum building now under construction in New York City. Selected because of their durability, lasting beauty, economy of maintenance, and ability to resist weather, corrosion, and fire, the steel panels will be supplied for the job by Truscon Steel Co., Youngstown, Ohio, a division of Republic Steel Corp. Approximately 750,000 pounds of the .037-inch-thick chromium nickel Type 302 stainless-steel panels will enclose the structure by July, 1956.

Designed as the sixth largest office structure in the nation, the building is being constructed by Turner Construction Co., New York, N. Y., at a total cost of $45 million. Covering a 419 × 197-foot city block bounded by Third Avenue on the east, Lexington Avenue on the west, and 41st and 42nd Streets on the south and north, respectively, the structure is located in one of the most congested areas of metropolitan New York.

Foundation work

Slattery Contracting Co., Inc., New York, N. Y., started foundation work early last year under a subcontract, and is now completing its work by placing the basement floor. The foundation consists of a reinforced-concrete slab laid on 8 inches of crushed stone. To reach the desired bedrock elevation, the company had to remove about 60,000 cubic yards of rock and 57,000 cubic yards of earth. Part of this material was used as fill in and around Fort Totten, N. Y., a suburb about 10 miles from the construction site. The remaining waste was loaded on barges and dumped into the sea.

Standard H-beams, built up with riveted faces, form the subbasement columns. These members weigh as much as 35 tons. American Bridge Division, subcontractor on steel erection, is fabricating all steel in it's plant at Ambridge, Pa., just outside Pittsburgh. Steel is first shipped by rail to Greenville, N. J., for sorting and stockpiling. From here, the steel is barged across the Hudson River to Manhattan, where trailer trucks transport it to the project site.

A Lima 7500 and two Lima 3500 cranes placed structural steel for the subbasement—31 feet below curb elevation—through the ground floor. Steel was placed from the ground floor to fourth-floor level by eight guy derricks which unloaded trucks parked in the street. Operating from the fourth floor, which has a setback, six guy derricks and a stiffleg derrick will bring the building to the next setback on the 15th floor. Then two guys and the stiffleg will raise the building from the 15th floor to the roof. The stiffleg derrick will remain on the fourth-floor setback to pick structural steel off trailer trucks parked on 42nd Street. The steel stockpiled on the setback will then be lifted to the 15th floor by the two guy derricks with 85-foot masts and 80-foot booms.

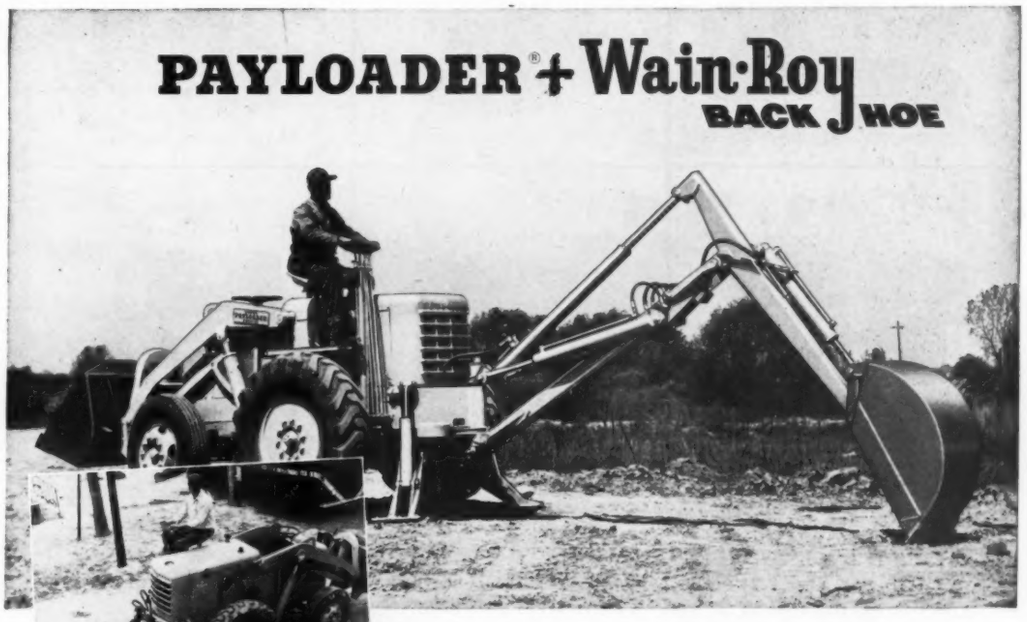
Column steel is two stories high and approximately 24 feet long. The largest structural steel member is a prefabricated truss 53 feet 3 inches long and 11 feet 9 inches deep, placed at the third-floor elevation and extending to the fourth-floor level. This truss was placed over the Lexington Avenue subway entrance, which is being incorporated into the building for necessary vertical support.

All girders, wind braces, trusses,

Structural steel from the Ambridge, Pa., plant of American Bridge Division is lifted to an upper floor by a stiffleg derrick. Steel is delivered to the 42nd Street site by trailer truck.

Handle hundreds of jobs
with this versatile combination

PAYLOADER® + Wain-Roy BACK HOE



Dig at right angles. Ideal for cramped quarters — saves maneuvering.

Dig neat square 8' deep bell holes in a hurry. Backfill with bucket.

You can keep this versatile piece of equipment busy making money for you every day. Handle regular tractor-shovel jobs plus digging trench, bell holes, foundations, tank excavations; uncovering pipe or cable and scores of other jobs no other machine will handle.

For the Wain-Roy is not an ordinary backhoe — its unique bucket action enables you to dig in hard-to-reach spots — dig anywhere in a 190° radius — cut vertical bell holes, square corners, smooth level trench grades. 190° swing, high dumping reach reduces maneuvering and loading time.

Try this versatile, profitable unit on your jobs — you'll wish you had, sooner.

Wain-Roy CORP.
Hubbardston, Mass.

Originators of the Hydraulic Tractor-Mounted Back-Hoe

You can add a Wain-Roy Back Hoe to your present Model HF or HFC Payloader in less than 2 hours

Please send me full details on the Wain-Roy Back-Hoe

Name ..... Title .....

Company .....

City ..... State .....

A concrete buggy awaits a load of Gritcrete on one of the upper floors of the structure. A hoist bucket, driven by a Lambert electric engine, rides a standard hoist tower to bring concrete to the hopper.

C&E Staff Photo

(Continued from preceding page)

hangers, brackets, and elevator steel members are of riveted construction, while all other connections are field-bolted with hand wrenches. Every riveted and bolted connection is being tested by two inspectors from the Pittsburgh Testing Laboratory, Pittsburgh, Pa. These men check riveted connections by the hammer-ping washer method, examine bolts for tightness with a hammer, and inspect all structural welding.

Fast concrete placing

Rizzi-Pavarini, New York City, a special combine formed for the project, is keeping concrete placing well within the maximum specified gap of eight floors between steel erection and concrete work. The firm's operations are being carried forward at a rate of 500 cubic yards per 7-hour shift. Steel framework and structural concrete, reinforced with two layers of American Steel & Wire style 316-28 welded-wire fabric, was used from the foundation through the ground floor. The same structural concrete, having an ultimate strength of 70-000 psi, is being used in elevator machinery rooms on floors 6, 13, 14, 28, and 45.

Gritcrete reinforced with welded-wire mesh is being used in the remainder of the building. Concrete specifications, conforming to the New York State Building Code, call for a normally classed minimum strength of 3,000 psi and an absolute minimum 28-day strength of 1,750 psi. A mix of 3,000-psi concrete consists of 1 part cement to 5½ parts separate volumes of fine and coarse aggregate, measured dry, with a maximum of 7½ gallons of water per sack of cement. Using grit-mix for its fine and coarse aggregate, Rizzi-Pavarini is obtaining an expansion of 25 per cent in Gritcrete pours.

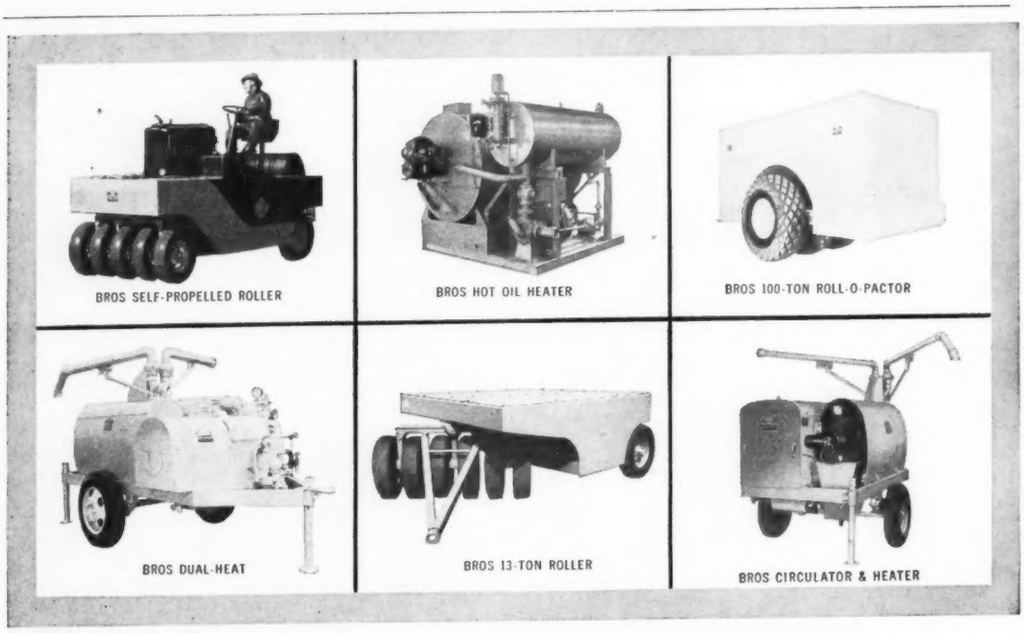
Colonial Sand & Stone Co., New York, N. Y., is delivering the needed quantities of cement, grit-mix or gravel, and sand to the site, dumping the materials into two Butler 66-cubic-yard hoppers located on the ground floor. These hoppers extend down to the basement floor, where specified amounts of material are weighed. They empty into two independent CMC 1¼-yard electric mixers which discharge into two separate 1¼-yard bucket hoists riding on standard hoist towers. The buckets, driven by two Lambert electric engines, are automatically tripped at the desired floor and dump into two hoppers. The concrete is then transported to the forms by buggies.

Rizzi-Pavarini is fabricating all forms for placing concrete along the sides and bottoms of steel beams. These beams have the same width and depth above the second floor. Forms are removed after four days. The floor slabs will be covered in accordance with the desires of tenants.

Since the freshly placed ground floor was to be used by trucks delivering materials, Turner doubled on the use of welded-wire fabric and added one bag of cement to every yard of concrete for this floor. This eliminated the need for planking. Trucks enter the building through two separate openings at the 41st Street side, unload, and exit through two openings on 42nd Street.

Panels of stainless steel

The mullion panels sheathing the building have a height of 11 feet 8½ inches, the distance between finished floor lines. Their width will vary, depending on whether they are used as wall, window, or corner panels. A 4-inch wall of masonry, separated from the panels by an air space, will back up the stainless steel skin. The paneling will result in a substantial weight-saving for the building, since it weighs approximately 1.50 pounds per square foot as compared with 48 pounds per square foot for a 4-inch-



Why settle for less than the Best?

BROS

Compaction Equipment

Self-Propelled Roller for seal coat, resurfacing and standard lift compaction jobs. Oscillation of all wheel pairs and 50 hp engine in this new BROS roller provide more tractive effort than any comparable roller. Torque converter drive, shuttle 3-speed transmission and high angle turn-around provide faster, surer handling.

35, 50 and 100-ton Rollers for "super-load" compaction. Big jobs like air fields, dams and super highways reach required compaction densities in fewer passes by these pioneers of *deep* compaction — giant BROS Roll-O-Pactors. Work in speeds up to 15 mph.

9 and 13-ton Rollers for base course compaction. These models are available in either straight wheel or the Wobble-Wheel design . . . which adds side-to-side weaving motion to the up and down oscillating axle motion of each wheel. Overlap of wide face tires actually provide full coverage in one pass.

Sheepsfoot and Diamondfoot Tamping Rollers for heavy earth work on embankments, etc. Models available from 2½ to 15½ tons when loaded with ballast. Special relief shank of feet provide easier withdrawal from clayey soils. Worn tips are easily replaced right on the job — *without welding*—by patented removable Tamprite tips.

BROS

Bituminous Equipment

Hot Oil Heater for asphalt circulation. This recent addition to the BROS Bituminous line transfers heat 60 per cent faster than steam when used with proper accessory equipment. Keeps heating oil moving fast under accurate control at all times. It's the finest entirely automatic unit available; performance output is governed by the turning of a knob.

Asphalt Circulator and Heater for high temperature asphalt heating and pumping beyond the range of steam. It has 4 distinct pumping speeds and wide heat transfer range. It raises temperature of 10,000 gals. of asphalt 40 to 50 degrees per hour after circulation starts. Semi-trailer and skid-mounted units available.

Dual-Heat for asphalt heating, circulating and pumping. A favorite with state highway departments, it quickly provides hot dry steam to "crack" hard-to-start bitumens of all grades. It can unload one car while heating another. Peak efficiency and positive operation under any job conditions.

For complete information on these products, see your nearest Bros distributor or write for literature. Then you'll readily understand why BROS IS THE BEST!

ROAD MACHINERY DIVISION

WM. BROS BOILER & MANUFACTURING CO.

1057 Tenth Avenue S.E. — Minneapolis 14, Minnesota

thick exterior wall of brick.

Approximately 3,200 window panels in the substructure will have vertically pivoted windows which can be cleaned from inside the building. Sealed with double-vinyl gaskets, the windows are designed to be weathertight in winds of 100 mph or more. A 7½-inch weatherproofed overlap of adjacent panels will give protection against weather along the horizontal joints. The vertical joints will be covered with a 16-gage stainless steel pier cover which will be bolted into place. Four-inch steel channels, welded from spandrel beam to spandrel beam along the face of the building, will hold stainless steel clips to secure paneling with stainless steel bolts.

The completed structure will have about 1,100,000 square feet of office space on its 42 floors. Air conditioning and elevator machinery will bring the building to a 45-story elevation—570 feet above curb level. For the exterior air-conditioning system, Carrier Weathermaster units will be installed under every window. A low-velocity air-conditioning system will be incorporated in the interior. Steam for heating the building will be purchased from the city and piped into the building. The roof will consist of a bituminous membrane topped with slag.

Personnel

Harrison & Abramovitz, with John B. Peterkin as an associate, all of New York, N. Y., are the architects for the building, which will be named for a major occupant having a 25-year lease, the Socony-Vacuum Oil Co. Inc. John W. Galbreath is president and Peter B. Ruffin, vice president, of the Galbreath Corp., New York City, owner of the structure. Project manager for Turner is M. H. Parsons. Larry Gilmore is the general superintendent, and E. F. Bennett, field superintendent. THE END

Catalog on excavator

■ A bulletin describing and illustrating the "Quick-Way" ½-cubic-yard Model L-2 truck shovel is available on request. This machine converts to a 10-ton crane and to trench-hoe, dragline, clamshell, pile driver, magnet, front-dump shovel, and hammer-drive-clam operation.

Features of the L-2 are described, and digging ranges and ratings are listed in charts. The bulletin also includes specifications of the new "Quick-Way" 6×4 tandem-drive carrier.

To obtain this literature write to "Quick-Way" Truck Shovel Co., Box 1800, Denver, Colo., or use the Request Card at page 18. Circle No. 87.

Sauerman moves office

The general offices of Sauerman Bros., Inc., manufacturer of various types of cableways used in construction, have moved to 620 S. 28th Ave., Bellwood, Ill. The new office building, located next to the firm's Bellwood plant, has enlarged facilities for all departments of the company.

PORTABILITY, flexibility of design, and high capacity make the new Heltzel E-3 Batchmaster cement plant an efficient and economical operating unit. The plant will work with any type or size of batcher up to 70 cubic feet, and holds 608 barrels of cement. Single or multiple recirculators increase the capacity to any amount required. Designed for easy erecting and dismantling, the E-3 can be carried over roads without special permits. The plant can be equipped with an elevator capacity up to 425 barrels per hour. For further information write to Heltzel Steel Form & Iron Co., Warren, Ohio, or use the Request Card at page 18. Circle No. 6.

HOW COME HYATTS ARE BETTER BEARINGS?

I'll tell you, says HY WHEELER, the sage of the socket wrench:

The *big* thing is, Hyatt's got more *know-how* than anybody else in the roller bearing business. Hyatts have been standard equipment on most cars, trucks and tractors since the early days, and brother, don't think all that experience don't make a difference!

F'rinstance, Hyatt's got a way of grinding the inside diameters of races that guarantees absolutely uniform wall thickness—developed it themselves. They use the finished race O.D. to produce perfectly concentric I.D. It's these "little" things you can't see with the naked eye that make a big difference in performance—and make me keep sayin':

There's other bearings that *look* as good, but you *hold out for Hyatts in the blue and yellow box.* When it comes to *quality,*

there's no substitute for . . .

HYATT

ROLLER BEARINGS

STRAIGHT BARREL TAPER

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY

DISTRIBUTED BY DEALERS EVERYWHERE

A GENERAL MOTORS PRODUCT

A UNITED MOTORS LINE

A portable Binanbatch system near the site keeps the surge hopper at the center filled constantly for truck mixers hauling to the job.

Ray Day Photos

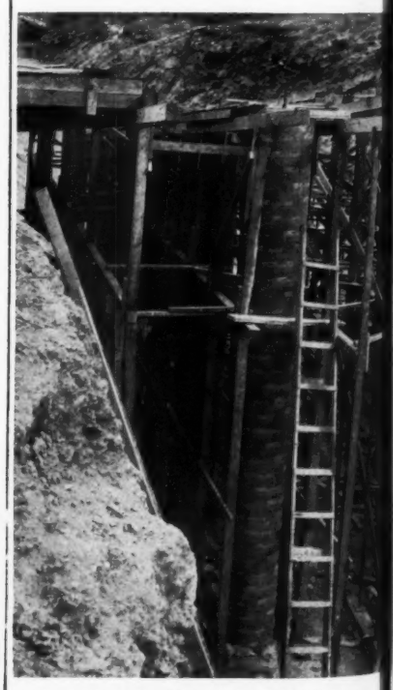
MATERIALS

Bridge work speeded by car

Construction materials selected for work on three important highway structures because of their ability to speed the job, enabled Bentson Contracting Co., Superior, Ariz., to keep to its four-month schedule on a 1.3-mile bypass project near Superior. This $211,000 job on U. S. 70, tying in with modern highways to the west and east, also called for the development of the base course and a plant-mix wearing course.

The largest of the three structures is the Queen Creek Bridge, a four-span reinforced-concrete bridge, 147 feet long, with a 45-degree skew. Its 40-foot clear-span roadway rests on a 16-inch-thick concrete deck slab. Altogether, the span called for 1,217 cubic yards of Class A and Class D concrete. Heavy footings, ranging from 5 to 12 feet wide, carry the structure down to a firm foundation about 12 feet below overburden in the channel.

The Stone Avenue Overpass, 94 feet 7 inches long, has a 40-foot curb-to-curb roadway and a reinforced-concrete deck slab 14 inches thick. The deck is carried on two five-unit bents of 24-inch columns. About 700 cubic yards of concrete went into this span. Near the east end of the project is



The 24-inch-diameter support columns for a structure are constructed quickly with Sonotube forms. In one instance, a crew filled a form efficiently in 10 minutes.

TIGHT SQUEEZE

But Bucyrus-Erie 22-B Transit Crane Makes It Look Easy

This job, located along a narrow, tree-lined residential street in Pasadena, California, required the use of a compact clamshell-crane. A storm sewer trench had to be dug through tough decomposed granite and clay. Then, concrete pipe varying in diameter from 45 to 75 inches had to be installed.

The contractor on the job made the best possible choice: he put a Bucyrus-Erie 22-B Transit Crane to work. Assignments like this are tailor-made for this machine. It's easy to move around with its rubber-tired carrier — can work in tight, narrow quarters. You can use it, as this contractor did, for both excavating and crane work—clamshell, orange peel, and dragline are all operated on the regular crane boom. Above all, it's dependable—a machine you can count on for steady high production every time it starts a job.

Bucyrus-Erie Transit Cranes are available in two sizes — the 15-ton Model 15-B, the 25-ton Model 22-B. Your nearby Bucyrus-Erie distributor can give you complete information.

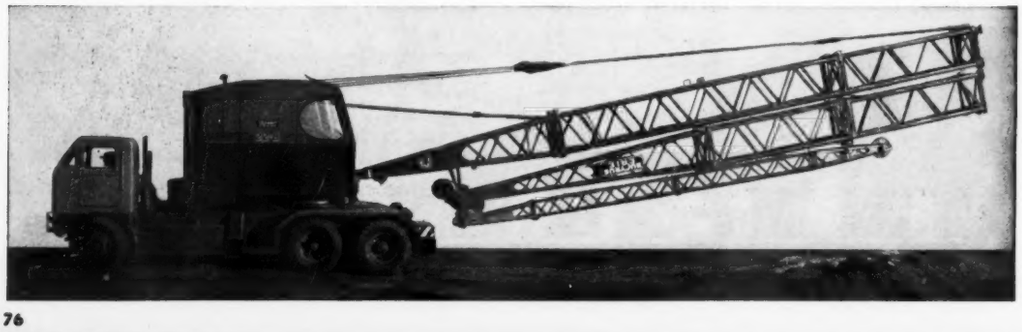
106E55

BUCYRUS ERIE

South Milwaukee, Wisconsin

Power controlled load lowering is one of the features the operator likes best about this 22-B. It helps him set pipe into position quickly and accurately. The job is part of a 10-year flood control project in Los Angeles county.

Boom folding mechanism (optional equipment at extra cost) permits crane booms 60 feet and longer to be folded with jib suspended underneath for moves between jobs.



careful materials selection

Concrete is placed fast in patented paper column forms; speedy delivery of other units keeps job on schedule

As concrete is placed by a Bucyrus-Erie 22-B crane with Gar-Bro 1-yard bucket, the material is vibrated by units supplied with air by a Le Roi compressor.

the Ray Road Overpass, designed as part of a traffic interchange pattern. This structure has 24-inch-diameter columns, two six-unit bents formed with Sonotubes, shallow abutments at the top of the cut, and a 17-inch deck slab. Work on this bridge was made difficult by the fact that it is on even radial alignment, is super-elevated .036 foot per linear foot on the radial pattern, and has a uniform grade of 5.23 feet for its length of 98 feet 7 inches.

Although foundations for the latter two bridges were constructed in the dry, the overburden at the Queen Creek Bridge site was saturated with water by two flash floods which roared down the stream just before the job started. The sand, wet for miles up the canyon, let a steady stream of water flow through the site. This caused the job to be delayed for about 20 days—a considerable length of time on a four-month schedule.

All excavation for the footings of the structure was done by a Bucyrus-Erie 22-B ¾-yard machine, rigged as a backdigger, which reached down and scooped the biggest boulders out of the stream bed. Vertical sides were kept in the excavation as much as possible. Crews, using extreme care when the footing reached foundation clay at grade point, set reinforcing steel quickly and placed the footing concrete before any caving could occur. Flows of ground water during this operation were handled by four Marlow gasoline-driven 2-inch centrifugal pumps having discharge pipes trained down the stream bed.

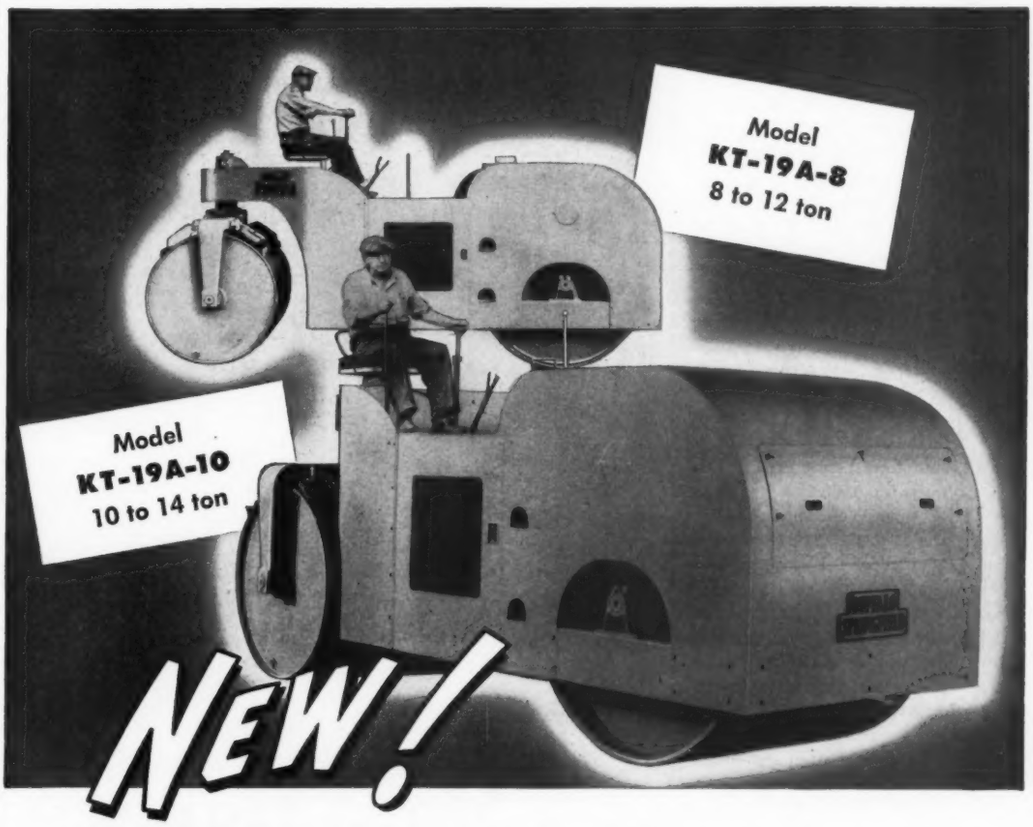
Work proceeds rapidly

By subcontracting the detailing, cutting, and bending of steel reinforcing to Soule Steel Co., Los Angeles, Calif., Bentson assured the job of rapid fabrication and delivery of the material. There was no break in the construction schedule, even though the steel had to be trucked 500 miles to Superior.

Sonotube paper forms were used for the rapid construction of all the 24-inch diameter support columns. These forms, delivered promptly to the site, not only saved carpenter time but also eliminated form oiling. They stripped easier than either wood or steel, and heavy crane equipment was not needed in their erection.

A four-quadrant band brace of 1-inch lumber, installed about every five feet on the Sonotubes, served

(Continued on next page)



BUFFALO-Springfield announces line of STANDARD TANDEM ROLLERS

These new STANDARD Tandem Rollers are designed especially for low-cost handling of any compaction job where pressures of from 8 to 14 tons are required.

Included as standard equipment is a heavy-duty, single-stage torque converter* that automatically matches power and speed to the material and grade variations of the job.

Without gear shifting, drivers can operate these rollers at any selected speed from 1 to 5 mph with the engine running continuously at its most efficient and economical power peak (2-speed mechanical transmission also available as optional equipment).

The heavy-duty, industrial-type engine (diesel or gasoline optional) delivers dependable power under all kinds of operating conditions. Buffalo-Springfield's widely-known bevel gear and final drive assembly offers the advantages of unusually low gear tooth bearing pressures, results in less wear, and is easy to adjust when required.

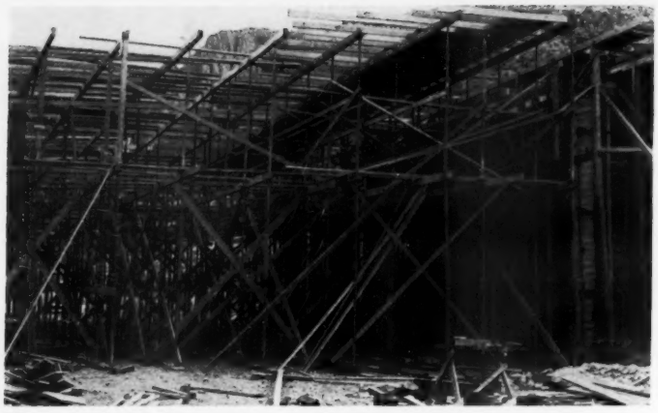
The massive, all-welded frame is heavily reinforced to maintain rigidity over a long operating life. Control instruments and levers are conveniently located to simplify the operator's job.

Ask your nearest Buffalo-Springfield distributor to tell you all about the new STANDARD Tandems. Dollar-for-dollar, feature-for-feature, they can't be matched by any other rolling equipment available today. Write for the new illustrated Bulletin No. S-68-555.

**Buffalo-Springfield has offered torque converter power since 1951.*

BUFFALO ROLLER COMPANY — SPRINGFIELD, SPRINGFIELD, OHIO, U. S. A.

THE LEADER IN COMPACTION EQUIPMENT DESIGN AND MANUFACTURE



Safway steel shores, arranged in two tiers, bring the Ray Road Overpass to its full height of 24 feet so that the deck can be formed.

(*Continued from preceding page*)

more as a lining device than as a brace. In one of the fast pours made with the Sonotubes, the concrete crew filled the form 16 feet deep very rapidly, then completed the pour in about ten minutes. Despite this rapid loading, the form gave no indication of failure.

Another forming method which saved time on the job was the use of Safway shores, arranged in two tiers, to obtain the necessary height of 24 feet on the Ray Road Overpass. The two tiers of shores were capped by timber, joists were placed at right angles to the cap, and plywood facing was then nailed to the joists to serve as a form for the exposed portion of the deck concrete.

All main form panels consisted of ⅝-inch plywood, nailed to 2×4 studs which were placed on centers ranging from 12 to 16 inches. The forms were rapidly built with the aid of power-saw equipment at the job site. Forms were set in place by the Bucyrus-Erie 22-B machine, which was converted to crane use for concrete placing after completing foundation work. Universal patented form ties, instead of the more cumbersome wire ties or form bolts, were used on the forms.

Concrete production

Concrete aggregates, as well as mineral filler for the plant-mix and granular ballast for the subbase, were produced under a subcontract by Don Flickinger, Phoenix. Flickinger set up a Cedarapids Junior Tandem crusher in Queen Creek Wash, not far from the job. Sand was produced near the site with the help of a small sand scrubber. The piles of sand and 1½-inch-minus aggregate were then stockpiled close to the batching setup.

The two bins of the small Binan-batch portable unit with Winslow scales were charged by a Wagnermobile front-end loader. Two conveyor systems, separated at the midpoint by a small transfer hopper just large enough to hold one batch of concrete, stepped up the output of the plant. The transfer hopper was kept filled for the three Challenge truck mixers which hauled concrete. As one truck mixer picked up a batch, another batch was made ready by the plant operator so that no time was lost in bringing concrete to the work site.

The truck mixers were able to back directly to the point of placement for several of the footings, dump their concrete, and move away without help from other equipment. For higher concrete work, the Bucyrus-Erie 22-B, rigged as a crane, and using a Gar-Bro 1-yard bucket, brought concrete from the truck mixers to the pours.

All concrete vibration was done by two Mall pneumatic machines powered by a Le Roi 105-cfm Airmaster compressor. Darex air-entraining agent was used in the 3,000-pound concrete mix to make it more work-

Workmen install reinforcing steel for one of the training walls on the Queen Creek Bridge. Fabrication of reinforcing was subcontracted, eliminating a possible source of lost time.

Most Modern Trucks on

Chevrolet's handsome new Task-Force models answer your job needs with the most modern design and engineering features the trucking industry has ever seen.

Styling that speaks for itself—and speaks well of you and your business! Styling that catches the eye and serves as an on-the-job advertisement! You'll notice *two* distinctively different design treatments are offered—one in light- and medium-duty models, the other in heavy-duty jobs. It's functional styling, too. The new panoramic windshield adds to all-over design appeal—and inside it's even *better looking*—with a wider, safer view of the road. Chevrolet's new Safety Step running board is *concealed* and stays free of snow, ice or mud. Drivers will especially like the broader, softer seats; the High-Level ventilating system that takes in outside air in all kinds of weather.

CHEVROLET

NEW CHEVROLET

CONTRACTORS AND ENGINEERS

able. A water cure was used on the bridge abutments, and Hunt Process Clear on the bridge decks.

The placing of an average 12 inches of 3-inch-minus base-course material, about 3 inches of 1-inch-minus aggregate base course, and 2½ inches of asphalt surfacing followed the conventional procedure. The material was trucked to the job, dumped, watered by a White 4,000-gallon truck-drawn unit if necessary, bladed by a Caterpillar motor grader, and rolled by a Galion three-wheel 12-ton machine. Later, the leveling course was placed, the asphalt seal coat applied, and the plant-mix surface laid and rolled.

Personnel

All Arizona State Highway Department design and supervision was under the general direction of George E. Lang, state highway engineer. C. B. Browning, deputy state highway engineer in charge of construction, assisted. Ray Gardner was resident engineer. F. E. Stearman was general superintendent on the job, and S. W. Henderson was job superintendent for Bentson Contracting Co.

THE END

Estimating instructions for grout requirements

■ A pocket-size card that gives brief instructions for estimating grout requirements for heavy equipment, machinery, anchor bolts, building columns, and bridge seats has been released by the Master Builders Co., 7016 Euclid Ave., Cleveland 3, Ohio. The data on the convenient reference card is based on Embeco premixed grout, a ready-to-use non-shrink grouting material that requires only mixing with water at the job site.

The front of the card lists Embeco premixed grout yield and estimating figures for one 100-pound bag or pail, a cubic yard of flowing grout, and 100 square feet of 1-inch-thick flowing grout. The use of pea gravel in the grouting mix is discussed. On the reverse side, an easy four-point estimating procedure is given. Packaging and storage information is also presented.

To obtain this card write to the company, or use the Request Card that is bound in at page 18. Circle No. 89.

A concrete-block wall panel, plant-assembled and delivered to the site in this form, is positioned by a Browning truck crane for a new church at Melvindale, Mich. Use of these prestressed panels saved approximately $250,000 in material and labor costs on the project.

Case history

Concrete-block panels cut church costs by $250,000

A saving of nearly half the estimated construction cost was effected by a parish in Melvindale, Mich., through use of prestressed concrete-block wall and roof panels in its new church.

The architect's original estimate for the new St. Mary Magdalen Church was $600,000, but the Adams Concrete Products Co., Ypsilanti, Mich., successfully bid on construction of the edifice with the cost-saving pre-assembled panels. The saving of nearly $250,000 was due principally to the elimination of hand labor to lay the blocks.

The concrete blocks were made on a Besser Vibrapac concrete-block machine, then assembled in panels and trucked to the site.

No mortar is used to hold the blocks together, since steel rods through each panel hold the mass under stress. Sections are joined together by steel channels at the vertical edges. Panels are swung into place by a crane and the edge channels are welded to a base plate and to adjoining vertical channels.

Walls that would thus take weeks to build in the conventional manner—using scaffolding, masons, and other material of hand labor—are erected in a few days.

Portable electric tools

■ The 1955 catalog of Black & Decker portable electric tools is now available on request. The booklet illustrates the complete line of tools, including attachments and supplies.

Among tools illustrated are portable drills, grinders, hammers, sanders, jig saws, radial saws and attachments, screw drivers, shears, and valve refacers. Brief descriptions, specifications, and price information are given for each tool.

To obtain Form No. 1 write to The Black & Decker Mfg. Co., Towson 4, Md., or use the Request Card at page 18. Circle No. 65.

Any Construction Job!

High-Voltage power saves on operating costs—saves time, too. All six new Task-Force engines are sparked by a husky new 12-volt electrical system. That means snap-of-the-finger starting even in cold weather, and boosted generator capacity. The high-compression power of these great valve-in-head engines keeps you running longer between gas stops.

Anything else? Plenty. Capacities go all the way up to 18,000 lb. G.V.W.—available in 2-ton models. Enough G.V.W. for practically any job! Frames are new—of 34-inch standard width to accommodate special bodies, and with more rigid, completely parallel side members. And there's new suspension, front and rear, to make the road a lot easier on the load.

Tubeless tires are included on ½-ton models at no extra cost. Power Brakes are standard on 2-ton models, optional at extra cost on others. All models except Forward-Control are available with Power Steering as an extra-cost option. New Overdrive is now available on ½-ton models, optional at extra cost; Hydra-Matic, on ½-, ¾- and 1-ton models. There's more still, but call your Chevrolet dealer for complete details. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

Task-Force TRUCKS

This new Shawnee Special loader has been designed for mounting on the Allis-Chalmers WD 45 tractor.

Loader for light tractor has easy mounting feature

■ The first of a new series of Shawnee Special loaders for light tractors is a unit adapted for the Allis-Chalmers WD 45 tractor. The loader features a crankshaft-driven hydraulic pump.

Double-acting cylinders provide positive down pressure and a loading height up to 9 feet. Buckets available for the unit are 48 and 66 inches wide.

Mounting the loader on a tractor is simple, and the loader is easily removed. The design of the new loader provides the operator with good visibility.

Street broom, bulldozer blade, and roller attachments are available for mounting in place of the loader bucket.

For further information write to Shawnee Mfg. Co., 1947 N. Topeka, Topeka, Kans., or use the Request Card at page 18. Circle No. 157.

Synthetic-rubber additive for bituminous concrete

■ Literature on a pellet-form synthetic-rubber additive for bituminous concrete is available from Naugatuck Chemical, 1230 Avenue of the Americas, New York 20, N. Y.

Surfa-Sealz pellets are small cubes about 3/16-inch in size, containing 40 per cent rubber hydrocarbon. Added to the heated aggregate in the pugmill, the rubber reduces hardening in asphalt surfaces and gives them improved stability, low-temperature flexibility, skid resistance, and adhesiveness.

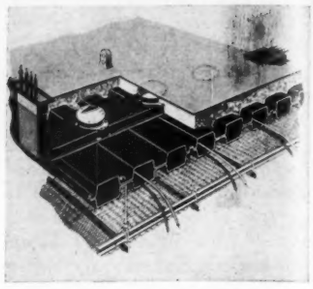
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 158.

Steel subflooring of cellular design

■ Cellular steel subflooring that provides unlimited electrical-outlet flexibility has been placed on the market by American Steel Band Co., Box 565 Pittsburgh 30, Pa.

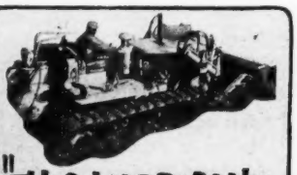
To speed construction, American cellular flooring is delivered in easy-to-handle sections. Because of its combination of high strength and light weight, it provides a strong working surface, as well as storage space during construction.

In addition, the need for wood forms, scaffolding, and temporary shoring is eliminated. Also, smaller footings and lighter structural steel may be used.



The cellular construction of American Steel subflooring permits electrical outlets to be placed at any location.

For further information write to the company, or use the Request Card at page 18. Circle No. 40.



"THIS LUBRICANT KEPT 'EM ROLLING IN MUD, MUCK AND WATER"

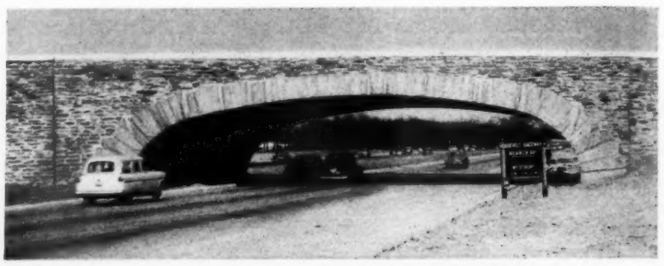
—says J. O. ARCHIBALD
of Redwood City, California

The job was clearing 500 acres of salt marsh for crystallizing ponds. To quote, "We selected LUBRIPLATE No. 107 for track and general lubrication and LUBRIPLATE APG-140 for transmissions and final drives. During the entire job there was no replacements of track rollers nor any tie-ups of equipment due to parts replacement or breakage!"

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose... LUBRIPLATE H.D.S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.



15 working days, start to finish, using Richmond Tyscrus

Hendrickson Brothers' veteran construction boss lays concreting achievement on Merrick Ave. Bridge to "unbeatable combination."

Cornell Kasso, General Foreman of Construction on the new Southern State Parkway in Long Island, gives credit for Hendrickson Brothers' outstanding accomplishment to *"this unbeatable combination—a good experienced crew, good weather, and the best in tools and material, including Richmond Tys. You can pour fast and heavy in all weather when you use Richmond Tyscrus. They always hold—with plenty to spare. I've used Richmond products for thirty-three years and they've never failed me."*

One big reason is the safety margin that's built into Richmond Tyscrus. All Richmond Tyscru production is plant-tested for load strength on modern Riehle hydraulic testing machines. In every size, their *actual* load strength far exceeds their *published* load. Independent scientific tests conducted by Brooklyn Polytechnic Institute show this fact clearly. *For example:* 1" 2-strut Tyscru, catalog-rating: 18,000 lbs., ultimate test strength: over 27,000 lbs.

Save time and money—be safe—use Richmond on *your* next job.

RICHMOND SCREW ANCHOR COMPANY, INC.—816 Liberty Ave., Brooklyn 8, N. Y. and 315 South Fourth St., Saint Joseph, Mo.

BLACKHAWK DUAL-ACTION DOZER

BLACKHAWK Half-Tracks provide extra traction, flotation, stability; combine with Dual-Action Dozer for low cost, highly efficient dirt and snow moving equipment.

Single-action Hydraulic Lift, Economy Model also available.

BETTER IN SO MANY WAYS

- Accurately controlled hydraulic down pressure and lift. Cuts into hard soils, frozen ground.
- Blade may be angled in 5 positions. Use as bulldozer or angledozer.
- Easily attached or removed after original installation.
- Blade lifts to height of 18". Sufficient clearance for passing through ditches, over curbs, or down steep banks.
- Accessories include adjustable side plates and skid shoes to make soil peeling easy and prevent gouging. Blade extension, spring kit and skid shoes convert 6' blade to snow plow.

BETTER FOR SO MANY JOBS

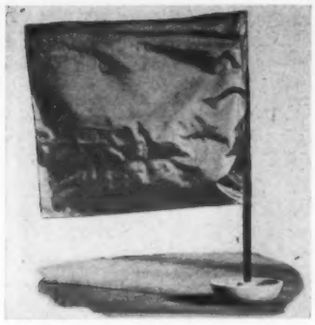
Backfilling—Removing Top Soil—Leveling—Landscaping—Terracing—Grading Cleaning Ditches—Excavating—Snow Clearance—Light Road Maintenance

ARPS CORPORATION

DEPT. CE NEW HOLSTEIN, WIS.

PRODUCTS FOR BETTER FARMS, BETTER INDUSTRIES SINCE 1920

"Okay! Who's the wise guy with the paint brush?"



The Roly Poly safety flag.

Booklet gives details on bucket-teeth repointing

■ To help power-shovel users pick the right repointer style for dipper teeth, American Manganese Steel Division, Chicago Heights, Ill., has released a revised guide book.

The literature illustrates the latest developments in repointer design as well as the latest welding rods for attaching or hardfacing the teeth. Also included is a step-by-step procedure on how to repoint successfully.

Charts list sizes of all the various styles shown, and the suggested uses of manganese steel bars, flats, and plate are outlined.

To obtain Booklet WA-77 write to the company, or use the Request Card at page 18. Circle No. 159.

Marker rights itself after it is knocked over

■ A simple safety flag traffic marker that rights itself if knocked over has been placed on the market by Engineered Equipment Co., Box 207, Warsaw, Ind. The Roly Poly traffic marker has a cast-iron base, hardwood post or staff, and a bright red vinyl plastic flag that can be seen easily several blocks away.

The unit stands 20 inches high on a 5½-inch-diameter base. Flag size is 224 square inches when extended or 97 square inches draped. The base is bright yellow for visibility, and the post is black.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 118.

Whiteman purchases Concrete Equipment firm

Whiteman Mfg. Co., Los Angeles, Calif., maker of concrete-finishing machines, screeding machines, vibrators, and power buggies, has purchased the Concrete Equipment Mfg. Co., Inc., also of Los Angeles.

The manufacture of the Champion line of transit concrete mixers will be continued at the Los Angeles plant of Concrete Equipment Mfg. Co.

NEW Powerhouse on wheels!

Trailer-mounted ONAN "CW" Electric Plant

5 or 10KW

For floodlighting, operating electric tools, emergency standby use.

Goes Anywhere!

Here's real mobility in high-capacity electric plants. You can tow a trailer-mounted Onan "CW" as fast as a car will travel . . . anywhere a tractor can go. Fully-protected by heavy-gauge steel housing; stays on the job in any weather.

Onan "CW" Electric Plants are unusually compact, quiet-running and economical to operate; weigh only half as much as water-cooled plants of the same capacity. Powered by Onan two-cylinder, suction-air-cooled gasoline engines built with massive, long-wearing parts for continuous, heavy-duty service.

WIDE RANGE OF ACCESSORIES

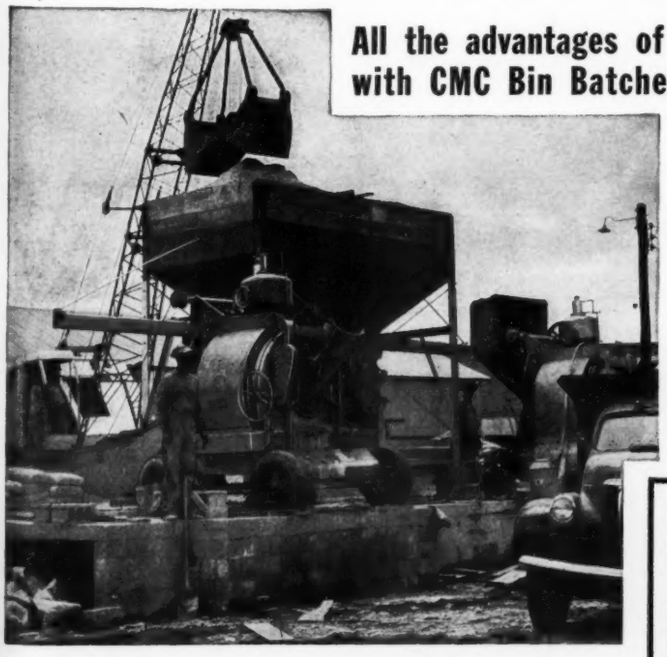
You can equip your "CW" Electric Plant for any type of portable service. Accessories include skid, battery rack, 9-gallon fuel tank, weather-proof housing, two-wheel trailer, or 4-wheel rubber-tired dolly. *Put one of these portable, high-capacity units on your job now!*

Write for Folder A-362

Onan ELECTRIC PLANTS

D. W. ONAN & SONS, INC.

2797 Univ. Ave. S. E., Minneapolis 14, Minn.



All the advantages of central plant operation with CMC Bin Batcher—Mixer combination

Want to save money? You can really do it with this highly portable CMC combination . . . and get all of the many advantages of a central plant to boot. Yes, whether charging an individual CMC 11S or 16S mixer or pair as shown on the left, a CMC Bin Batcher is the sure short cut to bigger profits.

Two or three compartment bins are available with a wide choice of traveling weighers and optional equipment. Matching bulk cement bins can be furnished if desired. Write for latest Bulletin. **Construction Machinery Companies, Waterloo, Iowa.**

A money-saving team in action! It's two CMC 16S mixers in tandem with a CMC two-bin Bin Batcher. A sure way to cut pouring costs.

The latest and best in stationary bins. New CMC Simplex, Duplex, Multiplex. Write for information.

Specify **kotal** to obtain a quality controlled, superior, plant mix for stock pile or immediate use.

ADVANTAGES:-

- Tough
- Durable
- Stable
- Cohesive
- All weather use
- Resists stripping
- Easy to use
- True economy

ALKOTE

Superior coating and anti-stripping agent—use it in surface treatment,—penetration,—mixed in place,—travel plant.

Write for detailed facts about KOTAL and ALKOTE

kotal COMPANY

360 SPRINGFIELD AVENUE
SUMMIT, NEW JERSEY

A Baker-Lull front-end loader delivers lightweight concrete for the 4-inch-thick ceiling slab on one of the Stanwood Development houses near Philadelphia. Use of the welded wire fabric as reinforcing in the ceiling slab provided both durability and an economical method of construction.

Case history

Ceiling costs reduced with reinforced concrete

The use of fabric-reinforced concrete ceiling construction on his 1,000-dwelling Stanwood development north of Philadelphia represents a saving of approximately $300 per house, according to George H. Weinrott, Philadelphia builder. The ceiling construction helped both to meet the need for a longer-term-mortgage residence and to provide a practically depreciation-proof structure.

Weinrott specified a 4-inch-thick ceiling slab of lightweight pumilite concrete structurally reinforced with welded wire fabric and finished on the underside with acoustical plaster. The reinforcing fabric is style 6 × 6 – 00/6, and its heavy longitudinal wires counteract positive moment at the midpoints of the 13-foot 3-inch spans into which the 26½-foot-wide ceiling is divided by a precast beam.

The builder figures his savings for inside ceiling construction run about 20 cents a square foot, and for outside construction, about 27 cents a square foot. Re-usable forms on adjustable jacks and Baker-Lull front-end loaders to haul and place the concrete also contributed to the saving, he reports. Altogether, about 80 per cent construction time was saved with the use of these materials and equipment.

Triple-reinforced blades cut all types of masonry

■ The new Clipper triple-reinforced abrasive blades are reported to cut hard, medium, and soft masonry with the efficiency of conventional blades, but with added safety due to a special reinforcing.

Reinforced out to the cutting edge with glass fiber webbing, the new Polk-A-Dot blades have extra reinforcing on both sides at the hub where the strain is greatest.

The blades derive their unusual name from the fact that both sides are symmetrically covered with raised abrasive "polka dots", each acting as an extra cutting edge. This type of blade construction is designed to reduce side-friction and resultant drag.

For further information write to Clipper Mfg. Co., 2800 Warwick St., Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 85.

Wire-rope slings made with new locking device

■ Wire-rope slings made by Broderick & Bascom Rope Co., 4203 Union Blvd., St. Louis 15, Mo., are produced with a new wire-rope locking device that does not require hand splicing.

In production the sling is formed by looping back the end of the rope and laying it beside the main rope body. The Steeloc locking sleeve slides over the two ropes until all the end strands are securely encased. The lock is then placed in a precision die, and hydraulic pressure up to 1,000,000 pounds is applied. The metal of the lock flows into the valleys and strands of the rope and places all strands under compression.

By using a locking device of heat-treated steel, the manufacturer has matched the hardness of the rope. Slings of rope up to 1 inch in diameter can be formed with the new process, and all types of fittings, attachments, and handling devices can be made with the Steeloc locking sleeve.

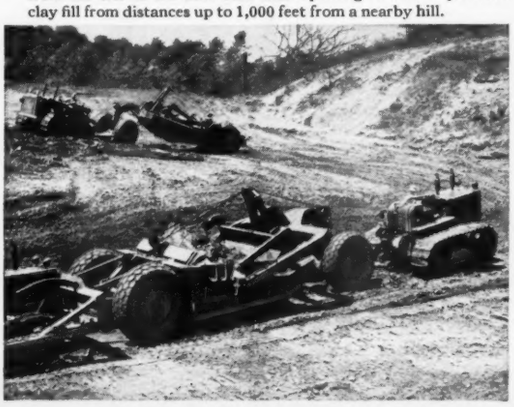
For further information write to the company, or use the Request Card at page 18. Circle No. 7.

Syntron appointment

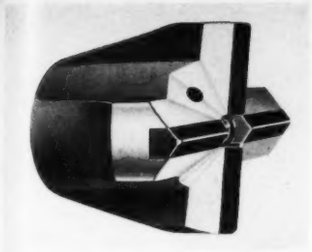
The Syntron St. Louis Sales Co., district representatives for equipment made by Syntron Co., Homer City, Pa., has appointed John A. Dahlem to its sales staff. Syntron manufactures vibratory equipment, feeders, conveyors, power tools, and allied equipment.

DAM FOR CORDRY LAKE, 700 feet thick at the base, is built by this fleet of three INTERNATIONAL TD-18A crawlers and scrapers and one INTERNATIONAL TD-14A with hydraulic dozer used for push-loading on inclines and in soft spots, and some other equipment.

LAKE LEAKAGE is eliminated by removing all porous soil and stone from the site of the dam base and replacing it with impervious clay fill from distances up to 1,000 feet from a nearby hill.



BUILDING UP THE DAM BASE moves along on schedule as one of three TD-18A scraper combinations brings a heaping load of clay to the construction site.



The new Brunner & Lay X-type Rok-Bit.

Tungsten-carbide bits for larger drills

■ For use on the new larger drilling machines now on the market, Brunner & Lay has introduced X-type tungsten-carbide Rok-Bits. These are available in 3½, 4, and 4½-inch-gage sizes, to fit on 1½ and 2-inch drill rods. The bits are now made to fit directly on the steel of two machines, eliminating the use of expensive adapters.

The X-type Rok-Bits feature a new body design and new job-fitted carbides, the manufacturer points out.

For further information write to Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill., or use the Request Card that is bound in at page 18. Circle No. 153.

Steel flooring panels designed to allow unlimited electrification

■ Galvanized-steel flooring panels providing unlimited floor electrification are illustrated in literature from Inland Steel Products Co., 4045 W. Burnham St., Milwaukee, Wis. Milcor Cellufior is a structural subfloor consisting of panels made of two formed sections of steel spot welded into single box-beam sections. The cells in the panels are used as raceways for electrical wiring.

The literature tells the advantages offered by the subflooring from the point of view of the architect, contractor, and building owner. Light weight, ease of installation, permanence, and fire resistance are among features cited.

Diagrams, tables listing properties, and specifications provide a complete description of the factory-produced panels.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 21.

Case history

Lightweight steel piling survives many re-uses

On its first major job application, the L. B. Foster Company's new lightweight steel sheet piling was found to be easy to insert and remove and demonstrated an unusual resistance to bending. Used in the construction of a sanitary sewer line in Cedar Rapids, Iowa, the high-strength piling eliminated many of the problems formerly encountered with wood sheeting.

Used in the construction of a sanitary sewer line, the L. B. Foster lightweight piling demonstrated its resistance to bending as it was driven, pulled, and redriven ahead of the work.

The contractors, Gjelledfald Associates, Inc., Forest City, Iowa, were required to place the sewer line in a ditch 8 feet wide and varying in depth from 17 to 26 feet. The piling was driven a block at a time ahead of the work, and as the job progressed, it was pulled and redriven further along.

The contractor reports that because the piling is easy to handle and has well-designed interlock joints, it speeded the progress of the work. The piling was used 15 times on this job.

Recommended primarily for construction jobs formerly handled with wood sheeting, the piling is available in two standard sections and in two gages on either a rental or an outright-sale basis.

Moves 1,000,000 cubic yards to build a lake

Howard Prince, veteran Indiana contractor, has used INTERNATIONAL crawlers to build more than 100 lakes since 1935—and he has two large lakes under construction right now!

A water shortage is being remedied and a new vacation area opened by a chain of fourteen lakes being built across Brown County, Indiana, by veteran lake builder Howard Prince, head of the Prince Lake Building Company, Nineveh, Indiana.

Latest and largest in the chain is Cordry Lake, the 103rd lake to be built by Prince.

Cordry Lake, which will eventually cover more than 600 acres, is being created by building a dam 750 feet long, 120 feet high, across two small streams. In excavating unsuitable material from the dam site and borrowing leakage-proof clay from a nearby hill, the lake builders will move over 1,000,000 cubic yards of dirt.

The entire job is being handled by Prince's fleet of seven INTERNATIONAL crawlers with matched IH scrapers and blades, and some other equipment.

Howard Prince has been an INTERNATIONAL owner ever since he first started in business, and states: *"I bought my first* INTERNATIONAL *crawler in 1935 and I've been using them ever since.*

"I've been increasing my INTERNATIONAL *equipment until I now have three TD-18As with scrapers, two TD-14As with blades, a TD-9 and two TD-6s on this job.*

"On lake building projects, as well as all other types of work, they have proved both dependable and economical through the years."

Get the same information that has enabled this successful contractor to make such wise equipment buys for 20 years. Call your INTERNATIONAL Industrial Power Distributor today. From the world's most modern line of earthmoving equipment he'll select the machine "right" for your job and demonstrate it on your job any time you say.

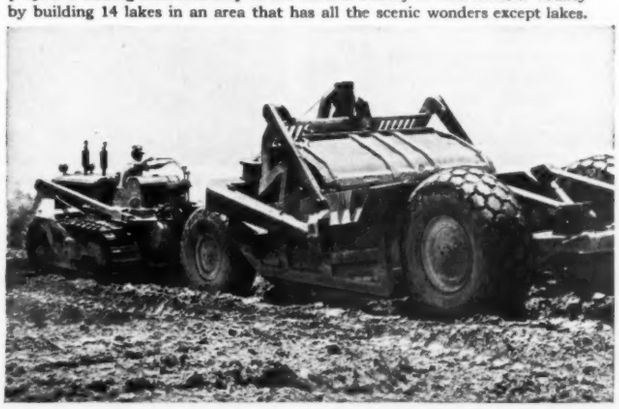
INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILL.

INTERNATIONAL HARVESTER

INTERNATIONAL INDUSTRIAL POWER

MAKES EVERY LOAD A PAYLOAD

REMEDY FOR NATURE'S OVERSIGHT. The Brown County Lake Development project is adding immeasurably to the natural beauty of that Hoosier county by building 14 lakes in an area that has all the scenic wonders except lakes.



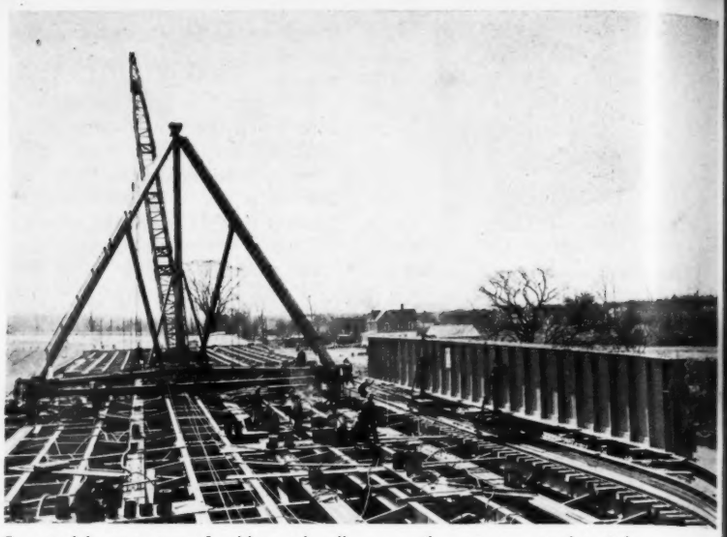
Self-lubricating plates and bushings for bridges and equipment

■ Self-lubricating expansion plates, shoes, bridge bearings, rocker bushings, and washers are illustrated in literature from Merriman Bros., Inc., 183–187 Amory St., Boston 30, Mass. Originally designed for bridges, Lubrite plates and bushings are now used on many other structural applications, and are also found on much construction machinery.

The basic Lubrite assembly consists of a sole plate, a Lubrite plate, and a base or masonry plate. Designed to stand up under exceptionally heavy loads, the Lubrite plate offers a sliding surface on which moving metal may ride while in motion. A special lubricant molded into drilled recesses in the plate or bushing forms a dense, non-plastic sliding surface.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 20.

Before the main span on the Westfield River Bridge is erected, a traveler sets approach-span steel.



Operated by a system of cables and pulleys, a rail car transports the girders from the north abutment to the traveler.

MATERIALS

Traveler places girders to c

Quick handling of steel from flatcar to trailer truck, rail car, and derrick speeds erection of superstructure

A 75-ton traveler with 90-foot boom, working from 78-foot cantilevered girders, easily placed the final 124-foot girders for the Westfield River Bridge, completing one of the last phases of the relocation of U. S. 5 in Agawam, Mass. The bridge is a 580-foot three-span structure with a 40-foot vertical clearance over the river.

The steel erection job on the bridge was handled by Harris Structural Steel Co., New York, N. Y., which started operations last November after the two piers and abutments were completed under a separate contract.

Fabricated in Harris' New Market, N. J., plant, the 57-ton girders were first shipped by rail—each member on three flatcars — to Springfield, Mass. A trailer truck, with a dolly supporting one end of a girder, transported each member from Springfield to the north abutment. Here, a Lima 802 crane transferred the girders onto a rail car which ran on tracks built from the north abutment to the traveler.

Small steel members, loaded on the rail car, were pushed manually to the traveler, while heavy steel was pulled out by a system of cables and pulleys. An American Hoist Iron Workers Special Model 180, also located on the north abutment, provided power for the traveler as well as the rail car. All the steel was handled in the same

"the Willard Way"

HERE'S A COMPLETELY MOBILE SET UP for batching and mixing specification concrete. It produces 30 cu. yds. per-hour using bulk cement or 21 cu. yds. per-hour using sack cement. Allows you to handle any concrete pouring job in any locality.

A "one man" plant crew with help of truck mixer drivers handles the whole operation. He picks up and weighs stock piled aggregates with the self-loading Willard Weigh-Batcher . . . cement is added . . . he dumps material onto Conveyor which end-loads the Truck Mixers.

You can keep several truck mixers busy this "Willard Way" and handle most average concrete jobs. It's one way for you to take those out-of-the-way jobs at your own price. Get the facts; write today for the "Willard Way" booklet.

"the Willard Way"

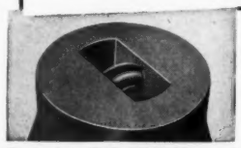
Manufactured in Los Angeles, Calif., and Galion, Ohio

WILLARD CONCRETE MACHINERY SALES CO.
1700 Wright Road, Lynwood (Los Angeles County), California
Member: T.M.M.B.

BATCH and MIX on the job!

Frederick
CAST SEMI-STEEL
BALLS

Your low cost production tool for
■wrecking old buildings ■smashing scrap metal
■smashing old paving ■secondary quarry breakage



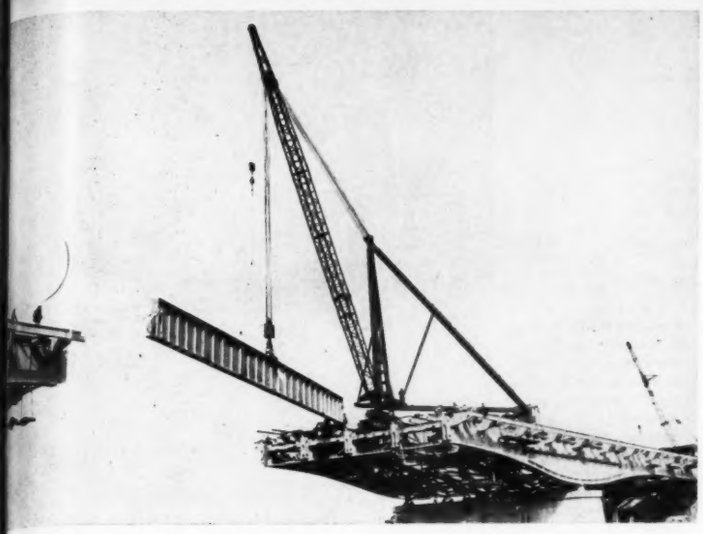
Exclusive E-Z SWING steel eye, deeply imbedded in ball, gives better control; more cable protection. Special Release Hooks for "free dropping" also available.

Tough and rugged, they're made to stand abuse without maintenance cost. Made in sizes to suit your needs. Prompt shipment F. O. B. Frederick, Md., from stock. Write today for free illustrated literature and prices on Frederick Balls and Weights that save your production costs.

SIZES AND WEIGHTS SHIPPED FROM STOCK		
500 lbs. (ball-shaped)	2000 lbs. (ball-shaped)	5200 lbs.
1000 lbs.	3300 lbs.	6500 lbs.
1500 lbs.	4000 lbs.	8000 lbs.

MAKERS OF MANHOLE FRAMES, COVERS AND STEPS • STORM GRATINGS • METER FRAMES AND COVERS • CENTRIFUGAL PUMPS • GRAY IRON CASTINGS

FREDERICK IRON & STEEL, INC.
FREDERICK, MARYLAND



The 75-ton traveler with 90-foot boom places one of the girders in final position. The crane is powered by an American hoist on the north abutment.

As the traveler holds the girder, a pin is driven into each end to make the member interconnect with the 78-foot cantilevers of the mid span.
C&E Staff Photo

ders to close last bridge span

way. Small members were stockpiled on the north abutment until needed.

Pins hold girders

After the traveler had picked the main mid-span girders off the rail car and placed them in final position, pins were driven at each end to connect the girders and the cantilevered spans. Four pins, two at each end of each girder, interconnect the girders and the cantilevers. These five girders were the longest and heaviest.

Mid-span distance, pier to pier, is 280 feet, and the two end spans measure 150 feet. Because of the heavy weight of the girders in the end spans, steel falsework was needed for intermediate support between the piers and abutments. The haunched portion of the girders, 15 feet deep over the piers, was erected in two horizontal lifts.

Harris subcontracted the paving of the four-lane reinforced-concrete roadway to Coleman Brothers Corp., Readville, Mass. The contractor's bid on the superstructure, consisting of steel and roadway, was $1,499,500.

Personnel

The relocation job is being done for the Massachusetts Department of Public Works. John Schnier is the erection manager for the Harris Structural Steel Co. and Thomas "Red" Bell was the superintendent at the project site. THE END

OVERMAN STONE AND BITUMINOUS SPREADER

THEY USE 'EM EVERYWHERE

. . . IN THE HEART OF TEXAS—where big people do things in a big way, the Overman Spreader proves its ability to uphold the Texas tradition—it does its work in a big way. While it is a small, compact machine, you will find it equal to the job, no matter how large. Yet it can easily be towed between jobs, and maneuvered into place on small driveways and parking lots.

For speed, economy, performance—you just can't beat it.

WRITE FOR BULLETIN TODAY

I. J. Overman Mfg. Co.
BOX 203 MARION, IND.

HOW TO SAVE UP TO 50%
ON CRAWLER MAINTENANCE DOWN TIME

PORTABLE ADAPTABLE HYDRAULIC PULLER

OTC POWER-TWIN

Removing crawler tractor sprocket with OTC 50 Ton Power-Twin pulling unit.

OTC Power-Twin 50 Ton Ram

SAVES TIME LABOR PARTS

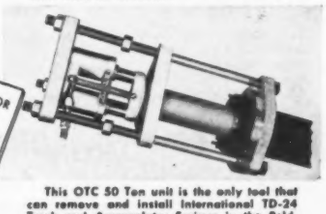
Same OTC puller with accessories removing track master pin.

OTC Puller Speeds These Jobs And Hundreds Of Others

In the shop or in the field, portable, adaptable OTC Hydraulic Pullers push, pull, spread, press, lift or straighten. Whatever your crawler maintenance problem may be there is an OTC Power-Twin team of ram and accessories to do the job faster, safer without damage to parts. You will save 50 per cent or more on Down Time.

Sharpen your bid pencil with confidence and shave your quotations down to the competitive bone with OTC Power-Twin pulling equipment in firm control of that unpredictable Down Time variable. Count on OTC performance to make you more money—get you more jobs. Illustrated here are only a few of the every day jobs that are done quickly and easily with these practical pulling tools. Write for free hydraulic bulletin.

OTC 100 Ton hydraulic unit removing pivot shaft from TD-18 tractor.



This OTC 50 Ton unit is the only tool that can remove and install International TD-24 Track and Accumulator Springs in the field

SEND FOR FREE NEW HYDRAULIC BOOKLET

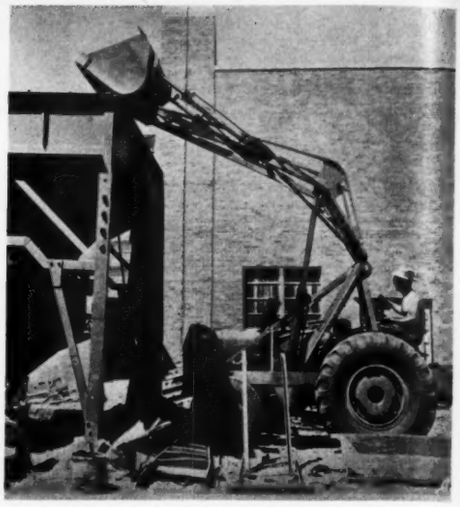
OWATONNA TOOL COMPANY
381 CEDAR STREET . . . OWATONNA, MINN.

Booklet on structures made of steel panels

■ A new manual on Armco steel building is available on request. It covers Series S, Types 1, 2, and 3 buildings; multiple-span buildings; and lean-to units.

The booklet also lists and illustrates accessories and provides instructions for erecting and finishing the buildings.

To obtain this literature write to Armco Drainage & Metal Products, Inc., Middletown, Ohio, or use the Request Card at page 18. Circle No. 160.



Case history: Whereas it formerly took five men to shovel sand and aggregate onto the conveyor belt feeding this weigh batcher, the contractor now accomplishes the job with only one man who operates a Baker-Raulang Shovelloader. Mounted on a Case tractor, the Shovelloader is fitted with dozer blade, sweeper brushes, or dump bucket for other jobs. The contractor also uses the rig as a portable crane for handling building materials. The versatility of this one machine represents savings in both equipment investments and in labor costs.

THIS TRADEMARK IDENTIFIES THE MORSE-STARRETT Wire Rope Cutter

MORSE-STARRETT PRODUCTS CO.
MORSE-STARRETT
MODEL NO. 1 MO-ST PAT. NOS. 1743404 1769001
REG. U.S. PAT. OFF.
CABLE CUTTER
OAKLAND, CALIFORNIA, U.S.A.

EASY
No special skill is required in the hammer-blow operation of this perfect wire rope cutting tool.

CLEAN
The cut is clean, smooth, without jagged ends; the wire rope is easy to thread or splice.

FAST
Ten Seconds, or less, is the usual time required to complete the smooth, clean cut.

SAFE
The operator is safe, because the blade is enclosed and locked in the body of the tool.

SEE YOUR DEALER OR WRITE DEPT. "M"

MORSE-STARRETT PRODUCTS COMPANY
1204 - 49th AVENUE OAKLAND 1, CALIFORNIA

New portable reel-type sound-powered telephone

■ A self-contained sound-powered-telephone communication unit designed for field and emergency use has been placed on the market by Wheeler Insulated Wire Co., Inc., Waterbury, Conn. The Communipak unit consists of a lightweight cable reel that holds up to 400 feet of rubber-covered telephone cable and two Wheeler sound-powered electric telephone handsets.

The equipment is always instantly ready for service, requiring neither battery nor connections to outside power sources. The voice itself generates the electricity required for its transmission.

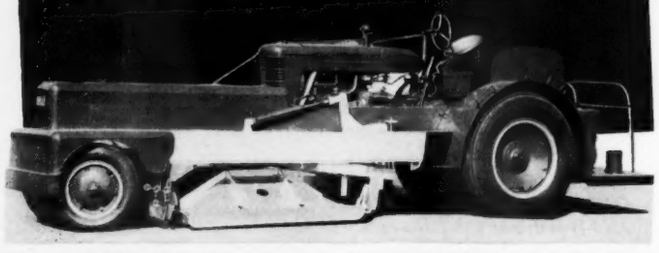
Since there are no parts subject to deterioration, the Communipak unit can remain on standby indefinitely. Heavy-duty slip-ring connections provide for two-way conversation even while the cable is being unreeled.

All parts of the equipment are of standard commercial telephone quality, and the telephone parts are moisture and corrosion-resistant.

For further information write to the company, or use the Request Card at page 18. Circle No. 107.

GOOD NEWS FOR TAXPAYERS!

Renewed level surface on asphalt for less than 10¢ a yd.*



The MONATCO Asphalt HEATER-PLANER

- Heats and planes in one operation
- Job-tested on streets, highways, roads, airport runways
- Planes off washboard corrugations, bleeding or fat
- Fills ruts and seals cracks with pre-heated material
- Leaves a table-smooth, non-skid surface, perfectly conditioned.
- Planes up to 1" deep, 78" wide.

*Reported by many users. Costs are lowest in America.

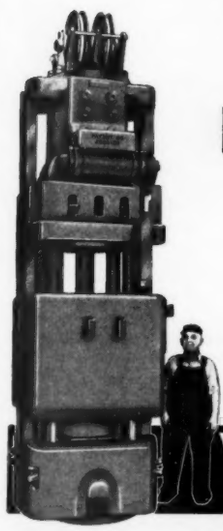
DOES NOT INCINERATE THE ASPHALT
No Smoke
Burns Standard No. 2 Fuel Oil
One Man Operates

Write for complete specifications and cost operating data

MONATCO MFG. CORPORATION KANSAS CITY, MO.
Exclusive Distributors: THE B&B EQUIPMENT CO.
1739 Locust, Kansas City 8, Mo.

Manufacturers of Pile Driving Hammers and Pile Extractors since 1852

Super VULCAN Differential Acting Pile Hammers Drive Toughest Piles



Positive action . . . simple design . . . rugged strength. Specialized power for driving the heaviest, longest and most difficult piling.

Write today for complete details and name of nearest dealer . . .

VULCAN IRON WORKS
327 NORTH BELL AVENUE
CHICAGO 12, ILLINOIS

The new Model 700 Trail-O-Patcher.

New bituminous mixer is self-contained unit

■ A new Littleford bituminous mixer, the Model 700 Trail-O-Patcher, has a capacity of 7 tons of hot mix and 12 tons of cold mix. With its own bitumen-metering system, aggregate-drying compartment, and heated 200-gallon bitumen tank, the self-contained mixer requires no additional equipment.

The Trail-O-Patcher has twin heat-insulated pugmills with the drying capacity of a rotary dryer 24 inches in diameter and 84 inches long. This dryer also eliminates dust nuisance. Accessible positive-acting controls are grouped conveniently on the machine.

Other features of the Model 700 are a hand-spray attachment for applying bituminous material, flame-deflector gate, trailer mounting, adjustable front leg, hinged exhaust stack, and large discharge pan that holds 7 cubic feet of material.

Designed for maintenance and repair work on roads, highways, streets, and smaller jobs, the new Trail-O-Patcher is able to work in any kind of weather.

For further information write to Littleford Bros., Inc., 457 E. Pearl St., Cincinnati 2, Ohio, or use the Request Card at page 18. Circle No. 122.

Concrete curing blanket for highway construction

■ A new and improved highway blanket has been introduced by the Delta Co., 333 W. 24th Place, Chicago, Ill. The Delta highway blanket is designed for curing highways, curbing and gutters, sidewalls, traffic separators, airport runways, and for repair jobs.

Said to be waterproof and strong enough to resist punctures and scuffing, the curing blankets can be reused over and over again. They are available in a wide range of sizes in widths up to 29 feet.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 16.

PROLONG
PRODUCTIVE LIFE
of
WORN SHOVEL
and
DIPPER TEETH
MANGANAL
T. M. Reg. U. S. Pat. Off.
11% - 13½% Manganese-Nickel Steel
WEDGE BARS
• We'll be happy to tell you how to save money by repointing worn teeth with Manganal Wedge Bars. Write today!
STULZ-SICKLES CO.
SOLE PRODUCERS 92 N. J. RAILROAD AVE. NEWARK, N. J.
NEAREST DISTRIBUTOR UPON REQUEST

BIG ORANGE Hi-Strength PRODUCTS
EXTRA STRONG! EXTRA TOUGH!
SCREW PIN ANCHOR and CHAIN SHACKLES
Sizes ⅜" to 2"
Loose Pin Shackles also available
W
A
D
In SHACKLES and CHAIN HOOKS it is STRENGTH that Counts
BIG ORANGE HAS IT!
Shackle Hooks Can Be Used on "HIGH TEST" Chain
Grab Hooks Available for Chain Sizes 1/4", 5/16", 3/8", 7/16", 1/2"
SLIP HOOKS for Chain Sizes 1/4", 5/16", 3/8"
Ask your Distributor or Write
MIDLAND INDUSTRIES, INC.
CEDAR RAPIDS, IOWA

View of construction of eight of the piers that will support the New York Thruway Bridge nearing completion across the Hudson River between South Nyack, New York and Tarrytown. Merritt-Chapman & Scott Corporation, Contractor, use AJAX Cups and drinking water equipment on this job.

Several times a day — at moments when he is relaxed, receptive, ready to read—crisp, clean AJAX Cups put their imprinted safety messages right in this worker's hands.

And safety messages *that get read,* says the National Safety Council, definitely help reduce accidents. Fewer accidents mean lower insurance costs . . . can even spell the difference between profit and loss on a job. Why not put AJAX to work in *your* accident prevention program?

A TYPICAL EXAMPLE

(Actual case history from insurance company files)

One year Contractor B paid insurance premiums of $16,165. The next year his payments totalled only $14,286. Yet his base manual rate for the second year actually was nearly $2000 *higher* than the first. He saved that, and $1869 more, because an active accident prevention program earned him a substantial credit on his second year premium.

AJAX® CUPS and Drinking Water Tanks deliver fresh water to workers — mean less time lost on the job. AJAX Cups and new all-size Dispenser are also ideal for stationary tanks, barrels, pipeline faucets. 4 oz., 6 oz., and 7 oz. sizes packed imprinted with assorted stock safety messages — or your own message to order.

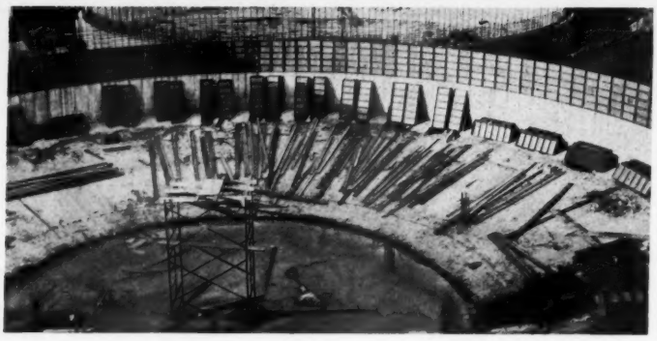
GET THE FULL STORY—Write us today for this new folder which gives full details on imprinted AJAX Cups and equipment.

United States Envelope Company

General Offices: • Springfield 2, Mass.

15 DIVISIONS FROM COAST TO COAST

C-3C



About seven-eights of the Universal forms used in pouring these concrete digester tanks will be salvaged for re-use.

Case history

Plywood panel forms have served for 50 pours

Prefabricated and standardized fir plywood forms used in concrete work at the $22 million Mill Creek sewage-treatment plant at Cincinnati, Ohio, have gone through five previous major construction jobs, some of the forms having survived more than 50 pours. The H. W. Miller Construction Co., Inc., of Covington, Ky., which has the contract for 12 giant digester tanks, estimates that it will salvage seven-eighths of the $80,000 worth of forms being used on this job. This would place the actual cost of the forms for constructing these tanks at about $10,000. Each of the tanks is 108 feet in diameter and 32 feet high.

The forms, fabricated by the Universal Form Clamp Co., are made of high-density overlaid fir plywood panels. The secret of the large number of re-uses, according to the contractor, lies in the moisture-resistant quality of the panels and the care used in handling the forms between pours. The tie in the Universal forms eliminates the need for drilling through panels, and the locking system protects the plywood edges.

The big tanks go up in three pours each. Between pours, the forms are dismantled and the faces treated with a light oil film applied with a rag.

Concrete sawing blade with hard cutting edge has long service life

■ A new concrete sawing blade reported to have an extremely hard cutting edge has been developed by Clyde Co., 205 6th St., Racine, Wis. The new blade has been used extensively on some of the major air bases, turnpikes, and on other large paving projects where, according to the manufacturer, it has demonstrated that it will substantially reduce concrete-cutting costs. In many instances, it is reported, the new blade indicated a service life more than double that of conventional blades.

The ability of the blade to resist abrasion and wear is credited to the use of an entirely new diamond bond which is fortified through a special process to provide the hard cutting edge.

Another feature of the Clyde blade is its greater width. By cutting a wider groove, the blade makes the subsequent application of joint sealer easier.

Available in 12 and 14-inch diameters, the blade will fit any make of concrete-sawing machine.

For further information write to the company, or use the Request Card at page 18. Circle No. 97.

Leaflet on tandem roller

■ The Ferguson 5 to 8-ton tandem roller is described in a leaflet from Shovel Supply Co., 4900 Hines Blvd., Dallas, Texas. The roller offers a compaction weight of 20,930 pounds with ballast. Rear roll compression is 290 pounds per inch of width.

The line also includes 2 to 3-ton and 3 to 5-ton models available as portable or tandem rollers.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 47.

NEW POWER PACKAGE in dramatic debut!

AiResearch Turbocharger makes major boost in horsepower on huge Caterpillar D9 diesel tractor!

MIGHTIER THAN EVER BEFORE, the new giant Caterpillar D9 Tractor equipped with a small but potent AiResearch Turbocharger pushed record tons of dirt during tests at Proving Grounds and in the field. Application of this Turbocharger to these big tractors increased their original horsepower to their present brawny rating.

The Caterpillar Tractor Co. pioneered the installation of AiResearch Turbochargers as standard equipment on production machinery...with exciting results! Never before in earthmoving history has such a small, light power package provided such a tremendous increase in power *...and with no additional fuel cost!*

In addition, the Turbocharger quiets the engine better than any known muffling device without any of the loss of power caused by mufflers!

The new Turbocharger, reflecting more than a decade of leadership in the development and production of radial turbines and compressors, has had more than 25,000 hours of laboratory and field testing. It again demonstrates the ability of AiResearch to produce small packages that do big jobs for industry. Your inquiry as to its adaptation and application to your equipment is invited.

THE GARRETT CORPORATION

AiResearch Industrial Division

9225 Aviation Blvd., Los Angeles 45, Calif.

DESIGNERS AND MANUFACTURERS OF TURBOCHARGERS AND RELATED MACHINERY

THE ELLIS PIPE CUTTER

is *best* for cutting large sizes of pipe

Write for circular and price list No. 34CEM on our complete line of pipe cutting tools.

No. 01 Cuts Pipe 4″ to 8″

No. 1 Cuts Pipe 4″ to 12″

ELLIS & FORD MFG. CO.

FERNDALE 20, MICH.

Self-propelled machine serrates bridge flooring

■ Vehicle skidding and side sway on open-grid steel bridge floors makes driving hazardous on otherwise modern bridges. A solution for this problem is provided by the new Safe-Grip surfacing machine that cuts small grooves in the top surface of existing open-grid flooring. Self-propelled, the serrating machine allows highway engineers to maintain one-way traffic while the machine is in operation.

A typical example of the application of the Reliance Safe-Grip machine was its use on the Cottage Farm Overpass in Cambridge, Mass. Constructed in the late 1930's, this bridge contains more than 30,000 square feet of riveted bridge flooring which made driving hazardous in bad weather.

After the serrating operation, vehicle skidding and side sway were reduced to an absolute minimum. According to the manufacturer of the Safe-Grip, not a single known case of skidding has been reported since the bridge was resurfaced.

For further information write to Reliance Steel Products Co., 3694 Walnut St., McKeesport, Pa., or use the Request Card at page 18. Circle No. 109.

Line of building papers

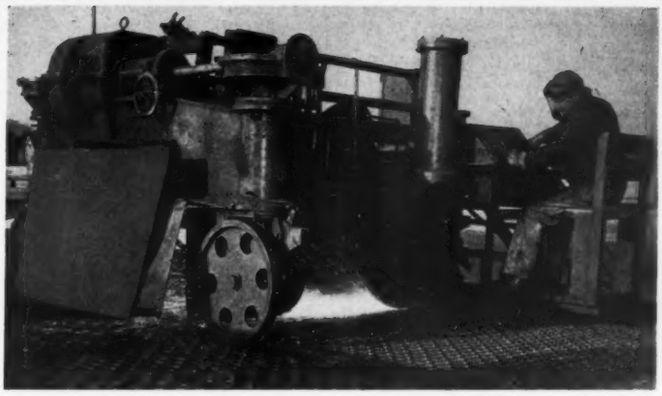
■ Literature available from the Angier Corp., Framingham, Mass., describes the concern's line of building papers.

Brownskin, a creped, asphalt-resin-impregnated duplex building paper, is used for vapor-sealing, sheathing, subfloor cushioning, and flashing. Double-ply and waterproof, the paper is weather-resistant and resists deterioration.

A second building paper described, reflective Lumaskin, consists of an annealed aluminum foil asphalt-laminated to both sides of creped kraft paper. It is also available with one reflective side.

Also illustrated is the company's Copperskin flashing, damp-proofing, termite shield, and vapor barrier. Non-rusting and tough, this paper consists of Brownskin with a sheath of copper.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 18.



Slippery bridge flooring that makes driving hazardous can be serrated with the Reliance Safe-Grip surfacing machine to produce a skid-proof surface.

New Southwest field office set up by Clark Equipment

A field office serving seven states and sections of two other states has been established in Tulsa, Okla., by the automotive division of Clark Equipment Co., Buchanan, Mich. The office, located at 403 S. Peoria, Tulsa, will provide sales, parts, and service facilities for the Clark line of axles, transmissions, torque converters, and complete power train packages. The office will cover Oklahoma, Texas, Kansas, Colorado, Missouri, Arkansas, Louisiana, Lea County in New Mexico, and Shelby County in Tennessee.

Wade A. Eskridge, manager of the new office, is a mechanical engineer with wide experience in the field.

STANDS UP TO SEVERE USE

and even abuse

One word describes a Hayward — **ruggedness.** Yes, it's as tough, strong sturdy as a bucket can be —and even more so. Extreme simplicity, little if any upkeep, high operating efficiency! Details on request Write! THE HAYWARD COMPANY, 50 Church Street, New York 7, N. Y.

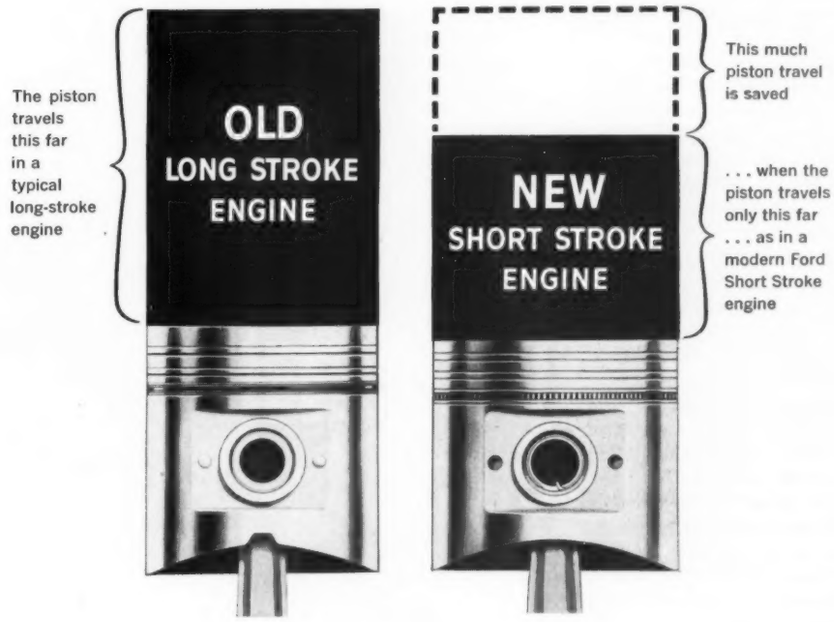
HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES

famous for performance since 1888

Look under the hood!

Something **NEW** is happening to truck engine design . . .


The piston travels this far in a typical long-stroke engine
OLD LONG STROKE ENGINE
This much piston travel is saved
. . . when the piston travels only this far . . . as in a modern Ford Short Stroke engine
NEW SHORT STROKE ENGINE

The big news in truck engines is modern *short-stroke design.* Piston rings last up to 53% longer. Engine friction is cut as much as 33%. You save up to 1 gallon of gas in 7. Only Ford has Short Stroke design in *every* engine—V-8 or Six—in *every* truck.

Differences between outdated long-stroke engines and Ford's modern Short Stroke design may seem small, but actually they're *not.*

In one case, for instance, Ford's stroke is shorter by 1⅞ inches. A small matter? This shorter stroke means 2,090 miles *less piston travel per year*—per piston—in an average year's driving of 11,000 miles.

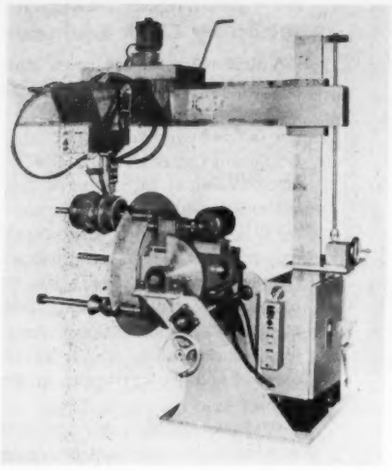
Less piston travel means less friction . . . less wear. And that means lower upkeep costs, longer engine life, greater gas savings and more usable power.

Be sure your next truck has a modern short-stroke engine that will not be outdated at trade-in time. You *will* be sure if it's a FORD Truck. Because Ford *and Ford alone* gives you a Short Stroke engine in every model.

Save money on your job with a Short Stroke Ford T-800 BIG JOB. It's the payload leader of its class—takes as much as two tons more load than other tandem-axle trucks. New 42,000 lbs. GVW. Latest rubber-bushed suspension system, power divider drive. New 11,000-lb. capacity front axle and heavy duty front springs available. Power Steering is standard.

Ford Triple Economy Trucks

THE MONEY MAKERS FOR '55



The Herrick automatic tractor roller and idler-rebuilding machine.

Case history: Lane Construction Co., Meriden, Conn., has found this mulching machine not only eliminates considerable expense for labor but also produces more uniform mulching than the old hand method. A Papec 181 forage harvester was adapted to fit the contractor's needs. Towed by a truck carrying the mulching material, the machine requires a crew of three: two men to open the bales and toss the material into the feed table, and one man to swing the delivery pipe back and forth to direct the spread of chopped material.

Welder rebuilds tractor rollers and idlers

■ A machine designed primarily for automatic welding of tractor rollers and idlers, but which can also be used for numerous other hard-facing and welding applications, has been announced by C. B. Herrick Mfg. Corp., 2000 Center St., Cleveland 13, Ohio. The Herrick automatic roller and idler rebuilder consists of a base, tilting and rotating work table, vertical column, and lateral travel carriage beam.

The vertical adjustment of the beam is motorized and provides a working range of 42 inches. The travel carriage may be used to manually position the welding head over the work or will provide up to 42 inches of automatic variable-speed movement laterally. The ram may be moved 360 degrees around the column so that welding can be accomplished behind or on either side of the machine.

The work table has a capacity of 500 pounds. With a tailstock or outboard bearing, a 1,000-pound load may be rotated with the table tilted at 90 degrees. A manual tilt of 135 degrees is also provided.

A heavy spindle in the center of the table holds idlers. Four spindles are provided for welding rollers, each equally spaced on the outer edge of the turntable. Two complete sets of cones hold the rollers on the spindles, one set for small and one set for large rollers.

For further information write to the company, or use the Request Card at page 18. Circle No. 12.

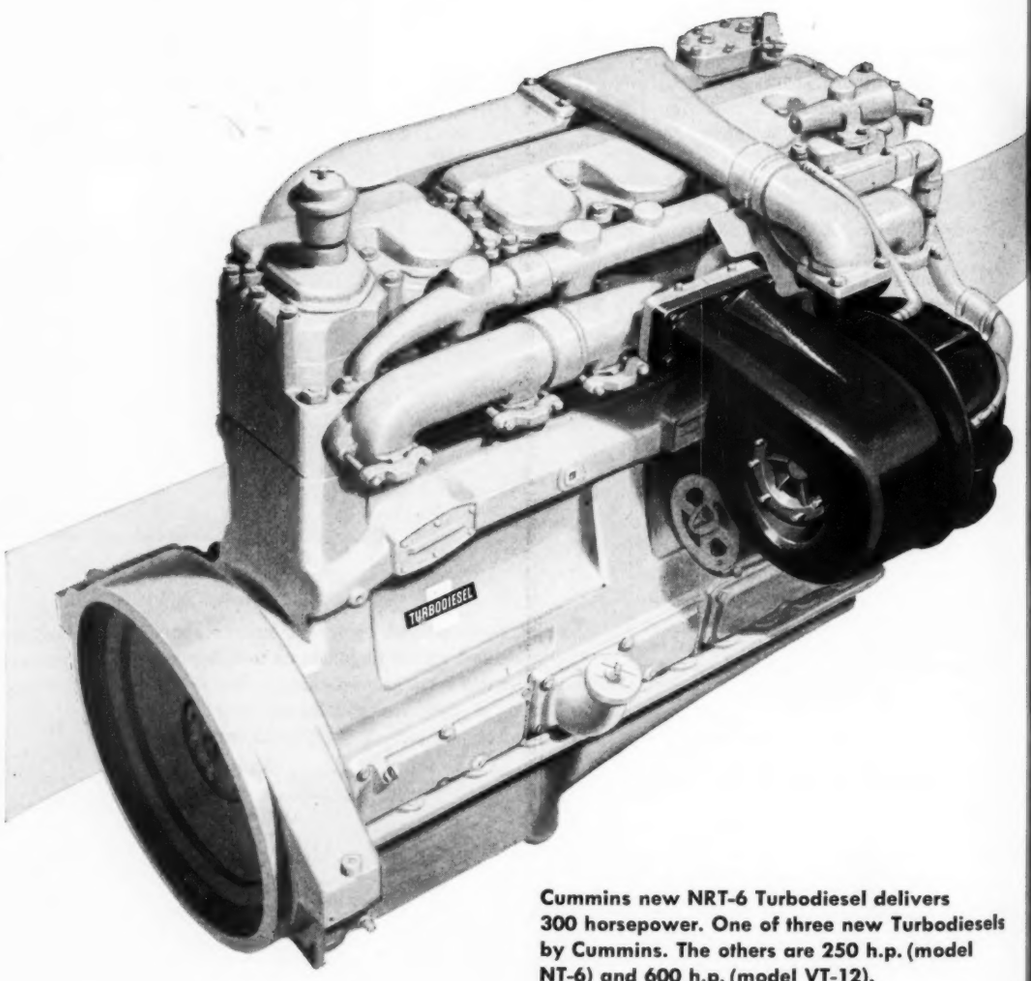
Galvanized water cans

■ A new line of water cans and coolers features a special galvanized material that is electrolytically bonded to the metal to prevent early rusting and deterioration of the can.

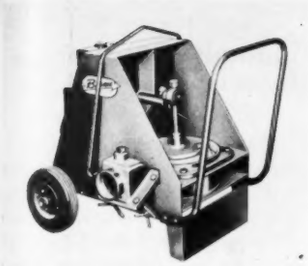
The Bull's Eye line is soldered and sealed throughout in a vacuum-tight construction which provides dead-air insulation. The receptacles, in 1½, 2, 3, and 5-gallon sizes, are available with or without Fiberglas insulation and semirecessed faucets.

For further information write to Acton Mfg. Co., Inc., 605 S. Summit St., Arkansas City, Kans., or use the Request Card at page 18. Circle No. 154.

NEW TURBODIESEL



Cummins new NRT-6 Turbodiesel delivers 300 horsepower. One of three new Turbodiesels by Cummins. The others are 250 h.p. (model NT-6) and 600 h.p. (model VT-12).



The Barnes Model BC 302 diaphragm pump.

New diaphragm pump

■ A new 3-inch diaphragm pump from Barnes Mfg. Co., Mansfield, Ohio, has a capacity of 3,600 gph at a 10-foot head. With 3-inch suction and discharge openings, the Model BC-302 has a maximum suction lift and discharge head of 25 feet. The pump is designed for handling mud and water of high solid content.

Weighing only 235 pounds, the Model BC-302 is easily handled by two men. Of cast-iron construction, the pump is semienclosed for exterior protection. It has a standard No. 3 diaphragm and valves are of the free-opening rubber-faced swing type.

The unit is powered by a Briggs & Stratton SR6 1.8-hp single-cylinder air-cooled gasoline engine. It is also available with a 1.5-hp gear-head electric motor.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 155.

These Douglas Fir plywood forms, devised by McDonald Bros., Los Angeles engineering and contracting firm, represent time and money savers in that they eliminate the need for drilling the forms for the dowel bars. Stripping is also a simpler operation.

Case history

Plywood used in forms cuts concreting costs

A cost-cutting and time-saving method of forming for straight runs of poured concrete foundations has been devised by McDonald Bros., an engineering and construction firm of Los Angeles, Calif. A plywood form, the firm has found, is a satisfactory substitute for the more costly planks generally used in blockouts forming the floor slab anchor shelf.

The new method uses a three-sided 4-foot-long Douglas Fir plywood form. Its vertical side is a piece of ⅜-inch plywood 10 inches wide, while the top and bottom are 1×2's set on edge and nailed at right angles to the top and bottom edges of the plywood board. After the wall forming is up, the plywood blockout forms are tacked into place by nailing into the 1×2's at top and bottom.

Dowel bars are then placed, with an additional bend being given each bar so that one end can slide into the open end of the blockout form and parallel to the wall. A small notch at the end of the form permits the bar to pass through the plywood when the next blockout section is tacked into place. The bars are straightened before the pour.

McDonald reports that this technique is economical in that it saves the time and expense of drilling the forms for the bars. Stripping the forms also becomes a simpler operation, since the 4-foot sections are simply slipped off the ends of the twice-bent dowel bars. Again, the extra bend in the bar allows it to lie close to the wall, after the forms are stripped, thus eliminating any interference with backfilling or other operations.

About 1,000 linear feet of these blockout forms is considered sufficient for 4,000 linear feet to be formed on the same job. This quantity, McDonald estimates, can be made up by two men in a day and a half.

Schield Bantam appoints

The Schield Bantam Co., Waverly, Iowa, has appointed Buel M. Wallis general sales manager of the company. Mr. Wallis formerly was general sales manager of the Adams Division, LeTourneau-Westinghouse Co.

L BY CUMMINS

ups your performance

and lowers your costs!

Cummins 300 h.p. turbocharged NRT-6 pulls full loads faster, permits higher speeds on grades, cuts cycle time, because it produces greater horsepower without increase in engine size or displacement.

Turbocharging—which harnesses exhaust gases normally wasted—produces this extra horsepower by achieving a more perfect air-fuel mixture in the combustion chamber. There is no parasitic load as in supercharged engines. This means drastically reduced fuel costs . . . fewer internal stresses . . . longer engine life.

In addition, Cummins exclusive PT fuel system is simple and trouble-free . . . makes fuel system maintenance costs negligible. It is so easy to understand and work with that no specialists are needed. And all Cummins Diesels run on inexpensive No. 2 diesel fuel or furnace oil.

For further information, see the Cummins distributor in your area, or send us this coupon today.

CUMMINS

Cummins Engine Company, Inc.
Columbus, Indiana

Leader in rugged, lightweight, high-speed diesels (60-600 h.p.)

Cummins Engine Company, Inc.
Columbus, Indiana

Please send me detailed information on Cummins new NRT Turbodiesel.

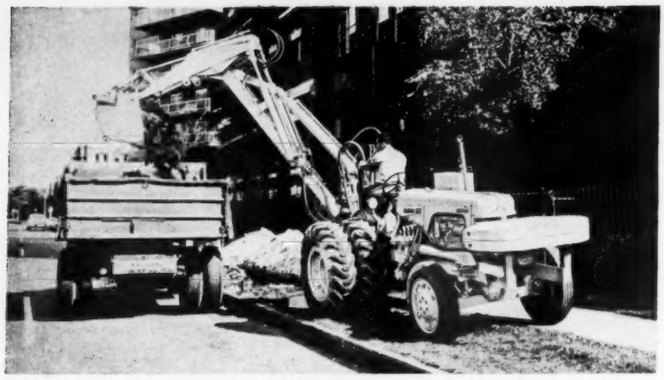
Name_____

Company_____

Address_____

City_____ Zone____ State_____

CE-6



The new Oliver Super 88 equipped with a hydraulically-operated trencher.

Increased power and sturdier construction are features of two new tractors offering choice of power units

■ Two new industrial wheel tractors, the Super 77 and Super 88, have been introduced by the Oliver Corp., 400 W. Madison St., Chicago 6, Ill. Both tractors will be available with either gasoline or diesel-engine power.

The gasoline engines used are the Oliver six-cylinder type with high compression ratios of 7.0 to 1. Diesel engines start and run on diesel fuel alone and require no auxiliary starting mechanisms or double fuel supply.

Power in both the new tractors has been boosted over that of previous models. The Super 77 develops 40 drawbar horsepower and the Super 88 has 49.81 drawbar horsepower.

Frames are heavily reinforced and have special mounting pads to form a sturdy attachment point for a variety of tractor-mounted equipment. Front axles are designed for heavy-duty service. Transmissions offer six forward and two reverse speeds.

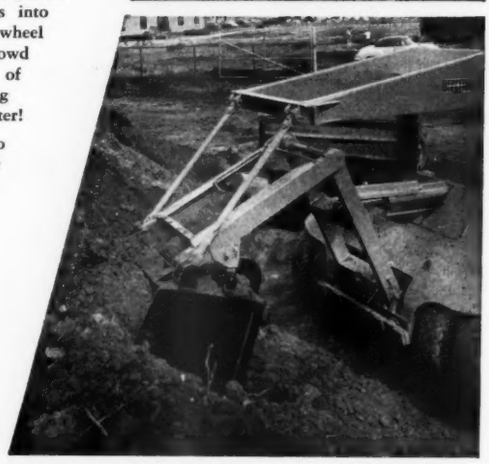
Other features are: double-disk differential brakes, bypass cooling, removable wet-cylinder sleeves, engine-hour meter, and auto-type recirculating ball steering. A torsional rubber suspension seat adjusts by a hand screw to suit the weight of the operator.

Optional equipment includes an independently controlled rear power takeoff and a belt pulley and flexible coupling for a front-mounted hydraulic pump.

Both tractors are designed to work efficiently with a hydraulic front-end loader, straight-line loader, side-mounted hydraulic mower, snowplow, backfill blade and crane attachment, and rear-mounted trencher with a ½-cubic-yard bucket.

For further information write to the company, or use the Request Card at page 18. Circle No. 24.

Dempster-Diggster bucket GETS A FULL LOAD WITH EVERY STROKE!



The hydraulic crowd and hoist operation of the new Dempster-Diggster GRD-101 gives you big shovel advantages in front end loading and excavation work. As shown in the at-work photos at right, here's what happens: Dempster-Diggster moves into material with shovel lowered against front of frame. No wheel traction is used to get excavation power. The hydraulic crowd and hoist moves bucket out and up following contour of material—getting a full bucket with every stroke . . . reducing loading time and idle truck time, thus getting the job done faster!

When you put your Dempster-Diggster into operation, one of the first things you will find is that your entire operation must be geared to a faster pace. This means greater efficiency of equipment and manpower—more profit to you!

Write us asking for Folder No. 3116 giving you complete information on the features of the Dempster-Diggster, including TRUCK-SPEED MOBILITY TO AND FROM JOBS . . . AUTOMATIC BUCKET TRIP . . . MAXIMUM DUMPING AND DIGGING HEIGHT . . . MINIMUM TURNING RADIUS . . . THE SHOVEL WITH TORQUE CONVERTER . . . HYDRAULIC STEERING, etc. Manufactured by Dempster Brothers, Inc.

In photo below camera catches Dempster-Diggster ready to back off and move up to a truck for loading.

DEMPSTER DIGGSTER

DEMPSTER BROTHERS, 465 Shea Bldg., Knoxville 17, Tennessee

Aluminum roof decking reduces maintenance costs

■ Aluminum roof decking designed on a modular system based on column spacing is described in literature from Reflectal Corp., 310 S. Michigan Ave., Chicago 4, Ill. Ingersoll aluminum roof deck consists of three simple components: galvanized steel sub-purlins, drop-in aluminum panels, and galvanized slide-on clips.

Advantages listed for the aluminum roof decking are that it eliminates all field painting, reduces maintenance costs, provides a ceiling of attractive appearance, improves over-all illumination, and reflects radiant heat to reduce thermal insulation requirements.

The booklet shows a simple recommended installation procedure, and contains detailed engineering drawings of the various components.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 43.

Booklet on asphalt pumps

■ A line of vacuum pumps suitable for handling asphalt is available from Kinney Mfg. Co., Washington St., Boston 30, Mass.

The Kinney high-vacuum pumps range in size from a 75-hp unit with 1,600 cubic feet per minute displacement to a small ¼-hp pump rated at 2 cubic feet per minute.

The line includes single stage and compound pumps for low absolute pressures to 10 microns and 0.2 micron or better, respectively.

To obtain Bulletin V-51B write to the company, or use the Request Card that is bound in at page 18. Circle No. 17.

The triple-duty Drillmaster, just introduced by Ingersoll-Rand Co., is a self-contained drilling unit offering the advantages of three drilling methods.

Self-propelled drill offers combination of three drilling methods

■ A new Ingersoll-Rand drilling machine, the triple - duty Drillmaster, embodies three separate and distinct methods of drilling. The versatile machine is designed to provide a range of hole sizes and drilling depths heretofore not available in a blast-hole drill.

The Drillmaster uses the new Depth-Master or "down the hole" drill for deep blast holes up to 6 inches in diameter. It can also use the Power-Master, a new heavy-duty hammer drill, for 4¼-inch holes, or the Roto-Master rotary drill for hole sizes up to 6¼ inches. Independent rotation supplied by a powerful rotary motor is used in all three methods of operation.

The Depth-Master will reach to any practical blast-hole depth. None of the energy of the drill is wasted in overcoming the inertia of the long length of heavy drill steel, because the drill actually follows the bit down the hole.

The Power-Master hammer drill is recommended for holes up to 60 feet deep. This unit is said to use less air and to have a greater drilling speed than any drill in its class. It is easily attached to the Roto-Master, and a specially - designed Carset bit completes this drilling combination.

When use of the rotary drill is indicated because of rock conditions, the Roto-Master rotary drill with about 20,000 pounds feeding pressure is recommended. The Roto-Master provides the rotation for roller-cone bit drilling and for drilling with either the Depth-Master or Power-Master.

Other features of the new Drillmaster unit are an easily-lowered tower providing long-steel changes, positive chain feed, a dust collector, an IR 600 cfm rotary compressor, and a motor-driven crawler assembly. The tower and drills are also available for mounting on the user's tractor or truck.

For further information write to Ingersoll-Rand, 11 Broadway, New York 4, N. Y., or use the Request Card that is bound in at page 18. Circle No. 58.

Case history: The use of Aeroquip products "has eliminated all of our hose replacement problems," says J. L. Scotti, excavating contractor of Middletown, Conn. This contractor reports that leaks and blowouts—with resulting breakdowns—are a thing of the past since he began using Aeroquip hose. He cites the increased flexibility of Aeroquip and the bulk hose re-usable fitting as added advantages. Here one of Scotti's men adjusts an Aeroquip 1509-20 pressure line on a Hough Payloader.

49 Reasons

WHY ARMCO GIVES FASTER SERVICE

Wherever your next job is located, it will probably be only a short distance from one of the 49 plants of Armco Drainage & Metal Products, Inc. This means you can get fast delivery on the Armco Drainage and Construction Products you need. Schedules are easier to maintain; transportation and handling costs are minimized. You can always count on the same high-standard Armco service in every respect.

In addition, there are almost 90 conveniently-located Armco sales offices over the country. Here you will find qualified sales engineers ready to contribute Armco's wealth of experience to help with your drainage and construction problems.

Experienced contractors prefer Armco Corrugated Metal Drainage Structures because they are easily installed without heavy equipment; no special skills are needed for assembly; installed costs are usually lower than for other drainage material. And work goes fast in any season. See chart for designs and sizes.

PRODUCT	SIZES	PRODUCT	SIZES
STANDARD CORRUGATED METAL PIPE	Diameter 8" to 96"	MULTI-PLATE PIPE	Diameter 60" to 180"
PIPE-ARCH	Span—Rise 18" x 11" to 72" x 44"	MULTI-PLATE PIPE-ARCH	Span—Rise 6'-1" x 4'-7" to 16'-7" x 10'-1"
ASBESTOS-BONDED	Includes standard Pipe and Pipe-Arch sizes	MULTI-PLATE ARCH	Span 5' to 30'
PAVED-INVERT	Includes standard Pipe and Pipe-Arch sizes	HEL-COR PERFORATED PIPE	Diameter 6" to 18"

Other Armco products include Liner Plates, Steel Sheeting, Pipe Piling and Pile Shells, Retaining Walls, Guardrail, Bridge Plank, Water Control Gates and a complete line of Steel Buildings. For more data on any product, write us. Armco Drainage & Metal Products, Inc., 3605 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO DRAINAGE STRUCTURES

AVOID LEGAL PITFALLS

Bid error excusable

THE PROBLEM: *Innocently overlooking a plumbing item of $86,500, a construction company bid $1,377,700 on a school-building job. The error was not discovered until after the bids had been opened and it was seen that the next lowest bid was $1,512,000. The school board was immediately notified of the mistake but refused to let the company add $86,500 to its bid. Instead of awarding the contract to the next low bidder and reserving a claim against the company for the difference, the board readvertised. The lowest bid on the second call was $1,644,100. Was the school district entitled to hold the company liable for $131,200, the difference between the second-lowest bid on the first call and the lowest bid on the second call?*

THE ANSWER: No. (Berkley United School District v. James I. Barnes Construction Co., 123 Fed. Supp. 924, decided by the United States District Court, Northern District of California, Southern Division.) The decision is reviewable by the United States Court of Appeals.

The court said that the board should not be permitted to take advantage of an honest mistake made in computing the company's bid, since it had been notified of the mistake before the bid was accepted. The court observed that the mistake occurred in the necessary haste involved in preparing the bid because of last-minute receipt by the company of bids of subcontractors.

The court intimated that despite the mistake, the board, under California law, could have let the contract to the next lowest bidder and held the company liable for the difference in cost. The board was not, as it contended, bound to readvertise for bids. Having chosen to do so, it could not thrust upon the company the loss resulting from an increased low bid on the second call.

Subcontractor loses suit based on fraud

THE PROBLEM: *A subcontractor sued the prime contractor claiming that he had falsely represented that masonry work could be completed at a profit for $6,800. When the work was 70 per cent complete, the subcontractor had received $6,120, 10 per cent being retained under the subcontract. Did a jury properly decide in favor of the contractor?*

THE ANSWER: Yes. (Ineson v. James Ross Associates, Inc., 108 Atl. 2d 556, decided by the New Hampshire Supreme Court.)

The jury may have believed the contractor's testimony that no representation was made that a profit would result. But the Supreme Court upheld the verdict on the ground that there was no proof as to how much the subcontractor had lost on his contract.

The court said that proof as to whether the contractor had made a profit on the whole job was properly excluded, because that was dependent upon factors that had no bearing on the contract for masonry. Furthermore, it would necessarily involve the examination of all the subcontracts and the reasons for a profit or loss on each. Likewise, what it cost the contractor to complete the masonry after the subcontractor quit had no bearing. "The cost of completing an unfinished job is not necessarily similar to that of completing the job as an entire contract." The subcontractor failed to prove that the contractor finished the job under the same labor conditions as would have confronted him.

Ohio minimum wages

THE PROBLEM: *An Ohio statute requires payment of prevailing wages to employees on public works. Is a city, operating under a constitutional home-rule charter and Civil Service regulations that are consistent with the Civil Service statutes, bound by the prevailing wage law as to Civil Service employees working on public improvements?*

THE ANSWER: No. (Craig v. City of Youngstown, 123 N. E. 2d 19, decided by the Ohio Supreme Court.)

Unionist guilty of attempted extortion

THE PROBLEM: *A jury decided that a local union official attempted to extort large sums of money from contractors under threat to cause work stoppages if payment was not made. Did the official thereby violate a federal statute which makes it a felony, punishable by a fine of not more than $10,000 or not more than 20 years imprisonment, or both, to obstruct, delay, or affect interstate*

dump high costs, too ...with

HENDRIX DRAGLINE BUCKETS

built for trouble-free, profitable operation . . . job after job

A TYPE AND SIZE FOR EVERY DIGGING PURPOSE

¼ to 40 Cubic Yards

All Hendrix Buckets available without perforations

Hendrix Lightweight Dragline Buckets

HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

commerce or attempt to do so?

THE ANSWER: Yes. (Hulahan v. United States, 214 Fed. 2d 441, decided by the United States Court of Appeals, Eighth Circuit.)

The case arose in St. Louis County, and the court upheld a judgment of conviction in the United States District Court for the Eastern District of Missouri.

One contractor was constructing a home-development project, another a packaging and storage building, and the third was grading airport runways.

The accused labor official's principal defense was that the facts charged against him, in extorting tribute from contractors engaged in local construction, were "too indirect, unsubstantial, and remote" to bring him within the scope of the federal statute. Rejecting this argument, the Court of Appeals said that the "exaction of tribute from contractors engaged in local construction work and who are dependent upon interstate commerce for materials, equipment and supplies, or who are engaged in constructing facilities to serve such commerce," is forbidden by the statute.

One state held liable for interstate bridge

THE PROBLEM: *The New York Interstate Bridge Commission contracted for rebuilding of an interstate bridge across the Delaware River. Under an arrangement between New York and Pennsylvania, Pennsylvania was bound to reimburse New York for half the cost. The State of Pennsylvania was not a party to the contract or performance bond; the construction arrangements were carried out wholly through the New York Department of Public works. Was the Commonwealth of Pennsylvania a necessary party to a suit by the contractor growing out of the contract settlement?*

THE ANSWER: No. (D'Angelo v. State of New York, 135 N. Y. Supp. 2d 914, decided by the New York Court of Claims; affirmed by the Appellate Division of the New York Supreme Court, 135 N. Y. Supp. 2d 153.)

The Court of Claims said that the fact that the contract had been signed on behalf of Pennsylvania was immaterial.

Stolen dynamite caps exploded by children

THE PROBLEM: *A road contractor's employees left in a truck on a public highway sticks of dynamite and open boxes of dynamite caps. A youngster stole some of them and took them home. His brother was injured when he wired a cap to a stick of dynamite and exploded it. Was the contractor liable?*

THE ANSWER: No. (McKinney v. Miller, 75 S. E. 2d 854, decided by the West Virginia Court of Appeals.)

The court applied the fundamental rule of law that not even gross negligence renders one liable for an injury that was not reasonably foreseeable. Decisions of the highest courts of New York and Massachusetts, rendered in cases bearing strong factual relationship to the West Virginia case, were cited. (Perry v. Rochester Lime Co., 219 N. Y. 60, 113 N. E. 529, and Horan v. Watertown, 217 Mass. 185, 104 N. E. 464.)

It is to be specially noted that these three cases involved injury to third persons, not to the pilfering children. The courts refused to allow damages in favor of the third persons because the unforeseeable delivery of the explosives to them by the pilferers constituted an intervening cause of injury.

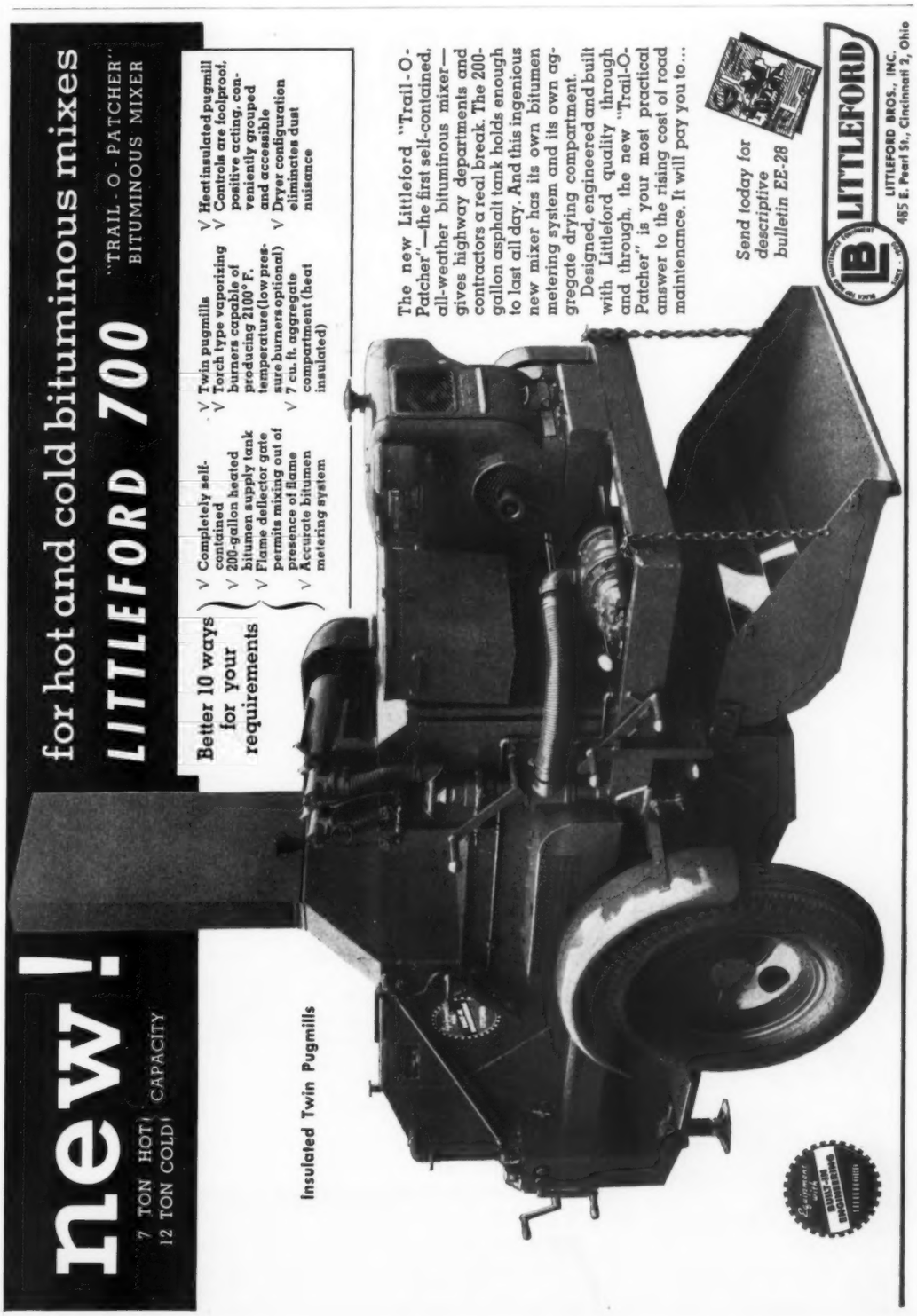
Settlement was final

THE PROBLEM: *After building construction had been completed, the owner complained of certain defects and a settlement was made. Both parties signed a mutual release which stated that the contractor was to be paid a certain sum and that the owner accepted the building "in its present condition as being in full and complete compliance with the contract". The release further stated that each party "does hereby mutually remise, release, and discharge the other party of and from any other or further liability, claims, or demands of every name or nature growing out of, concerning, or affecting the said contract and the construction and completion of said building thereunder and all matters connected therewith, and that said written contract has been fully performed and completed to the satisfaction of both parties".*

Did the release cover defects that the owner discovered later?

THE ANSWER: Yes. (Kay Pharmacal Co. v. Dalious Construction Co., 276 Pac. 2d 756, decided by the Oklahoma Supreme Court.)

The court said that, generally, a release covers only grounds for complaint that are known when the release is given and that a release of a


new!
7 TON HOT
12 TON COLD CAPACITY
for hot and cold bituminous mixes
LITTLEFORD 700
"TRAIL-O-PATCHER"
BITUMINOUS MIXER
Better 10 ways for your requirements
√ Completely self-contained
√ 200-gallon heated bitumen supply tank
√ Flame deflector gate permits mixing out of presence of flame
√ Accurate bitumen metering system
√ Twin pugmills
√ Torch type vaporizing burners capable of producing 2100° F. temperature (low pressure burners optional)
√ 7 cu. ft. aggregate compartment (heat insulated)
√ Heat insulated pugmill
√ Controls are foolproof, positive acting, conveniently grouped
√ Dryer configuration eliminates dust nuisance
The new Littleford "Trail-O-Patcher"—the first self-contained, all-weather bituminous mixer—gives highway departments and contractors a real break. The 200-gallon asphalt tank holds enough to last all day. And this ingenious new mixer has its own bitumen metering system and its own aggregate drying compartment.
Designed, engineered and built with Littleford quality through and through, the new "Trail-O-Patcher" is your most practical answer to the rising cost of road maintenance. It will pay you to...
Send today for descriptive bulletin EE-28
LITTLEFORD
LITTLEFORD BROS., INC.
485 E. Pearl St., Cincinnati 2, Ohio
Insulated Twin Pugmills

contractor from specified claims will not release claims for defects still undiscovered unless, as in this case, the release is so worded as to indicate mutual intention to cover all claims whether discussed at the time or arising out of defects discovered afterward.

Federal tax liens

THE PROBLEM: *Subcontractors filed mechanics' liens for labor and materials furnished on a school district building project. After the notices of liens had been filed, the federal government filed a notice of tax liens. Did the subcontractors' liens come ahead of the federal lien?*

THE ANSWER: Yes. (Bain v. Caruso-Sturcey Corp., 134 N. Y. Supp. 2d 246, decided by the New York Supreme Court, Nassau County.)

A federal statute gives the government priority over all claims of a corporate debtor who makes a general assignment for the benefit of creditors. However the court said that this statute did not apply because the subcontractors' liens had been perfected before the prime contractor had made an assignment for the benefit of creditors.

Material man's rights on public contractor's bond

THE PROBLEM: *A Texas statute requires public-works contractors to give bonds to pay for labor or materials, and requires that claimants file itemized and sworn statements within 90 days after the labor or materials are furnished. (1) Was a material company protected by filing a claim which gave the dates when materials were furnished and the amounts due, but did not state the quantity delivered for a school building or the unit prices charged? (2) Was the claim against the bond valid where it did not contain a sworn statement that the prices charged were just and reasonable, as required by the statute?*

THE ANSWERS: No. (United Tile Co. v. Kermit Independent School District, 273 S. W. 2d 434, decided by the Texas Court of Civil Appeals, El Paso.)

The court said that failure to comply with the statutory requirements was not justified by the fact that the school district paid money to the contractor after being notified of the material company's claim.

Deficient workmanship

THE PROBLEM: *When a subcontractor on a federal building contract sued for labor and materials furnished, the contractor demanded a set-off of the amount spent to correct defective workmanship and materials. Was the right to a set-off limited to such expenses as were reasonably necessary to correct the defects?*

THE ANSWER: Yes. (United States for Use of D-C Construction Co. v. Bell, 122 Fed. Supp. 558, decided by the United States District Court, Middle District, Alabama.)

The court disallowed some of the contractor's counter-claim in whole or in part, as being excessive or unreasonable. Those items covered labor, repainting, profits on the work of making the job conform to contract, loss due to production delays, premium on a bond, and an overcharge on payroll taxes and insurance.

Lack of bids on job makes contract void

THE PROBLEM: *A Louisiana city awarded a separate contract for street curbing, guttering, and drainage, as an adjunct of paving, without competitive bidding required by statute. Did this invalidate special assessments levied against the abutting property?*

THE ANSWER: Yes. (Thompson v. City of Alexandria, 77 So. 2d 584, decided by the Louisiana Court of Appeals, Second Circuit.)

The court said that the fact that the work improved the street was immaterial.

Surety is held liable

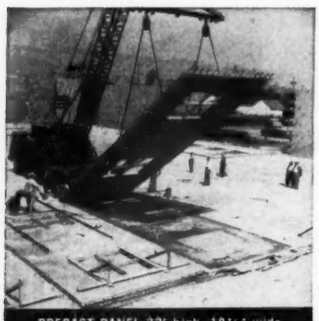
THE PROBLEM: *Federal construction contracts called for liquidated damages for delay in completing the work. Could the surety on performance bonds disclaim liability for delay on the ground that the damage clause was not authorized by government regulations? The surety had accepted premiums on the bonds and had known that the damage clause was in the contracts.*

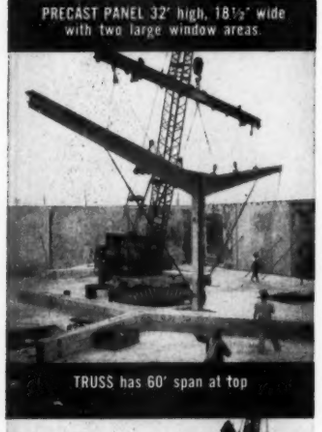
THE ANSWER: No. (Hartford Accident & Indemnity Co. v. United States, 127 Fed. Supp. 565, decided by the United States Court of Claims.)

Laborer's heat stroke is ruled an accident

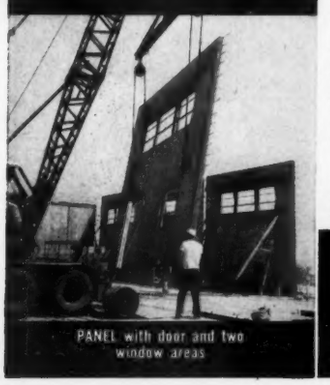
THE PROBLEM: *While working in a deep pit on a building job where the temperature was 105 degrees, an employee suffered a cerebral hemorrhage and collapsed. Was he entitled to an award of workmen's compensation under Arkansas law, even though he had high blood pressure and heart disease?*

THE ANSWER: Yes. (Tri-State Construction Co. v. Worthen, 274 S. W. 2d 352, decided by the Arkansas Supreme Court.)


PRECAST PANEL 32' high, 18½' wide with two large window areas.


TRUSS has 60' span at top

114,000 LB. SLAB being positioned


PANEL with door and two window areas

SUPERIOR
Complete Accessories Plus Experience on Tilt-Up Jobs!

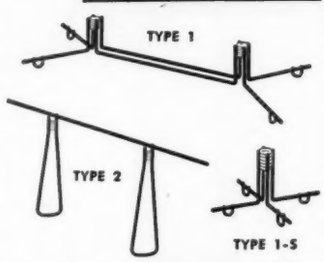
On every Tilt-Up job the proper type of Pick-Up Inserts and Brace Anchors as well as their location in the slab or precast structural member are of prime importance in order to withstand the stresses occurring when *tilting, lifting,* and *positioning.* As pioneers in this field, SUPERIOR has developed various types of accessories and correct procedures resulting from the experience of thousands of job applications.

SUPERIOR accessories are designed for fast and efficient handling of all types of precast panels and structural members. The Pick-Up Insert provides dependable anchorage for bolts which secure a lifting angle to which slings are attached when the panel is raised. Brace Anchors secure the temporary bolts by which the Braces are attached. The exclusive pivoting action of the adjustable Braces permits quick positioning and alignment of panels. Braces are assembled with 2 x 4's or pipe of lengths to fit job conditions.

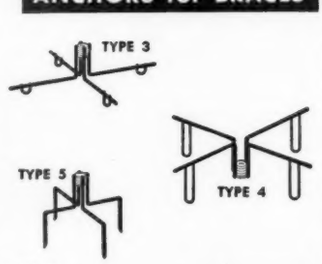
The many types of SUPERIOR Inserts, Anchors, and Braces for every job condition together with complete layout service provide a combination which offers safe and efficient handling of precast panels and structural members.

For complete details request a copy of BULLETIN TU-2.

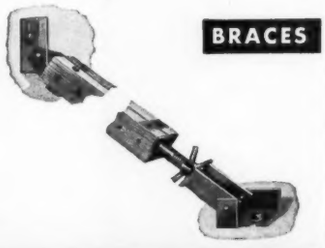
PICK-UP INSERTS



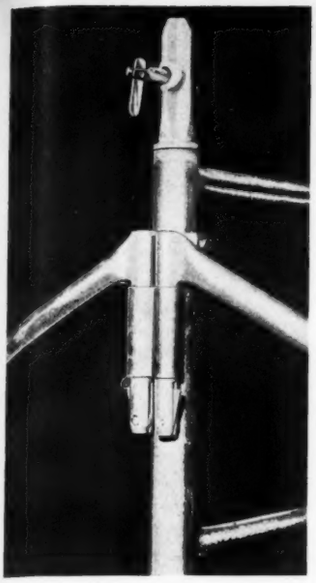
ANCHORS for BRACES



BRACES



SUPERIOR CONCRETE ACCESSORIES, INC.
4110 Wrightwood Avenue, Chicago 39, Illinois
New York Office 1775 Broadway, New York 19, N. Y.
Pacific Coast Plant 2100 Williams St., San Leandro, Calif.



Ezebilt scaffolding is now galvanized to prevent the formation of rust.

Galvanized scaffolding can be erected faster

■ The entire line of Ezebilt scaffolding is now galvanized for protection from rust, according to the Universal Mfg. Co., 3333 Eastshore Highway, Richmond, Calif.

Applied to panels, braces, and all other components, the galvanized coating overcomes one of the main obstacles to fast scaffolding erection —the formation of rust in snug-fitting parts. In addition, the lubricating quality of the galvanized surface contributes to fast erection and dismantling.

The manufacturer emphasizes that the change to a galvanized coating will not increase the price of Ezebilt scaffolding.

For further information write to the company, or use the Request Card at page 18. Circle No. 66.

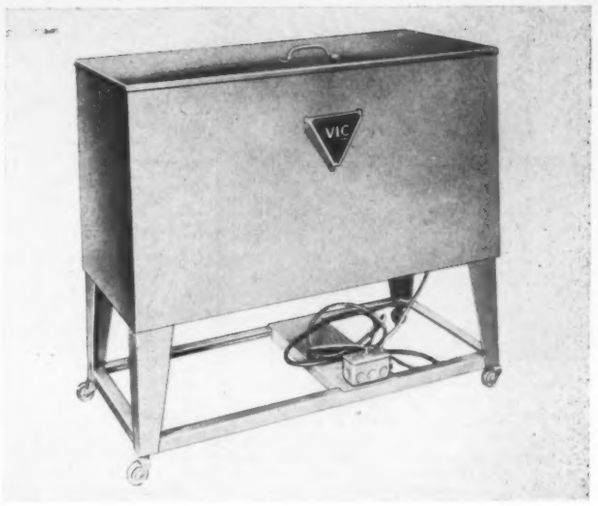
Folder on crawler tractor and motor scraper issued

■ Allis-Chalmers presents its recently announced HD-21 tractor and TS-360 motor scraper in a new folder available on request.

The 44,000-pound HD-21 tractor offers the advantages of 204-hp at the flywheel through a new engine-torque converter-transmission combination. The new diesel tractor has been designed with a number of new features, including improved fuel combustion; heavy, straddle-mounted final drives; heavier, stronger, and longer-wearing tracks; and wrap-around radiator guards.

The 280-hp TS-360 scraper has a 20-yard heaped capacity, and operates at speeds from 3 to 20 mph. Features are a new Allis-Chalmers 844-cubic-inch power plant, improved heavy-duty gears, and a new multiple-disk cable control with a new safeguard switch that automatically stops cable travel at maximum lift.

To obtain this literature write to Allis-Chalmers Tractor Division, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 29.



The degreaser and parts cleaner made by Vic Cleaning Machine Co., Minneapolis, Minn.

Degreasing equipment

■ A compact degreaser and parts cleaner 34 inches high, 19 inches wide, and 40 inches long has been placed on the market by Vic Cleaning Machine Co., 1313 Hawthorne Ave., Minneapolis 3, Minn.

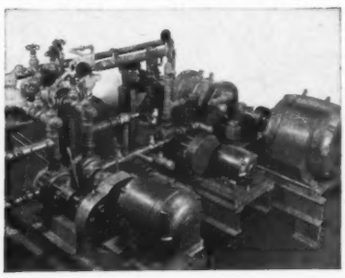
The equipment removes soil and grease by injecting room-temperature solvents through a pressure jet and then scouring with a stiff cone-shaped brush. A pump operated by a foot switch leaves the operator's hands free to direct the solvent jet and manipulate the brush.

For further information write to the company, or use the Request Card at page 18. Circle No. 54.

4 Steps to Better Paving with EMULSIFIED ASPHALT

CONTINUOUS RESEARCH and "pilot studies" are conducted in the central laboratory at Lafayette. All McConnaughay-Approved Specifications run the gauntlet of at least two years' laboratory testing and development, followed by five years of field tests.

QUALITY-CONTROLLED PRODUCTION of emulsions through mills designed to handle up to 100,000 gallons per day (Model B-14-18 illustrated). McConnaughay mills have outstanding records of dependability extending over 25 years of successful operation.



ACCURATE MIXING of emulsions and aggregates according to McConnaughay Specifications designed to meet general as well as local requirements. All McConnaughay Licensees are experienced contractors who bring practical "know how" to mixing operations.

EFFICIENT LAYING... the final step in the coordinated service from laboratory to emulsifier to mixer to paver. Our extensive, closely-knit organization, fully experienced in all phases of the industry, gives assurance that McConnaughay Licensees will do the job right.

Look to your nearest McConnaughay Licensee for the fast, dependable service on any paving job. Fully equipped to take on complete contracts or provide the laboratory facilities, emulsions and technical services required... he is always ready to work with you closely in solving any problem. If you are figuring on highway, street, or general paving, get in touch with your nearest McConnaughay Licensee or contact...

McCONNAUGHAY LICENSEES
Operating K. E. McConnaughay Emulsified Asphalt Plants

Bituminous Materials Co.
P. O. Box 267, *Terre Haute, Ind.*
Wabash Valley Asphalt Co.
Terre Haute, Indiana
Brookman Construction Co.
17th & Gharkey Sts., *Muncie, Ind.*
Fauber Construction Co.
Lafayette, Indiana
Asphalt Materials & Construction, Inc.
960 E. 22nd, *Indianapolis 2, Ind.*
Ready-Mix Asphalt, Inc.
P. O. Box 882, *Fort Wayne 6, Ind.*
Walsh & Ikeler
R. R. #2, *Gary, Indiana*
Bituminous Materials Co.
416 S. Water St., *Jackson, Mich.*
Bituminous Materials Co.
318 Atlantic St., *Bay City, Mich.*
Emulsions, Inc.
Lawrenceville, Illinois
Bituminous Materials & Supply Co.
415 Maple St., *West Des Moines, Iowa*
Plants:
Spirit Lake, Iowa
Iowa City, Iowa
Menlo, Iowa
Doherty and Swearingen Co.
53 Main St., *Yarmouth, Maine*
Berkshire Asphalt Co., Inc.
620 Berkshire Ave., *Springfield, Mass.*
James Huggins & Sons, Inc.
Medford & Commercial Sts.
Malden 48, Massachusetts
C. C. Plumb, Elmwood Station
P. O. Box 65, *Providence 7, R. I.*
C. C. Plumb
Portland, Connecticut
Albany Asphalt & Aggregates
75 State St., *Albany, New York*
Knight Paving Products, Inc.
1655 Union Rd., *Gardenville, N. Y.*
Knight Paving Products, Inc.
Vine Street, *Ithaca, New York*
Knight Paving Products, Inc.
1980 *East* Ave., *Rochester 10, N. Y.*
Knight-Bitumen Corp.
Watertown, New York
Seaco, Incorporated
2700 Industrial Drive, *Columbia, S. C.*
E. A. Mariani—Emulsified Asphalt
Hooker's Point, *Tampa, Florida*
Pan-Am Southern Corporation
P. O. Box 2, *New Orleans 6, La.*
(Also serving Alabama and Mississippi)
Asphalt Products Co., Inc.
Powell Ave., *Nashville 11, Tenn.*

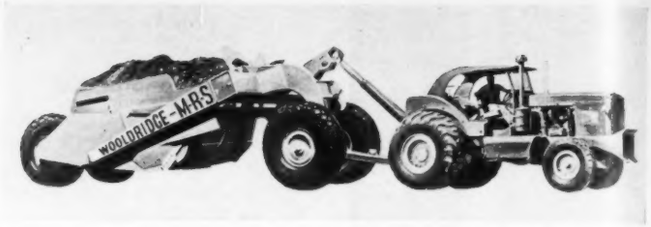
Eastern Representative:
John A. Dow
157 Church St., *New Haven 10, Conn.*

SPECIFICATIONS OF THESE COLD-MIX PROCESSES AVAILABLE ON REQUEST

1 – Penetration Macadam, 2 – Open-Graded Plant Mix, 3 – Open-Graded Road Mix, 4 – Dense-Graded Plant Mix, 5 – Dense-Graded Road Mix, 6 – Mat Coat, 7 – Seal Coat, 8 – Sand Mix, 9 – Sand Honing, 10 – Patching, 11 – Mastic-Mix, 12 – Driveway Construction.

K. E. McCONNAUGHAY LAFAYETTE INDIANA
EMULSIFIED ASPHALT PLANTS AND PROCESSES

"Now remember, we're just retired railroad men down on our luck. . . ."



The new Wooldridge M-R-S scrapers are designed with traction masts to take advantage of the weight-transfer feature of M-R-S four-wheel tractors.

Scrapers for tractor with special traction feature

■ A special line of four-wheel cable-operated scrapers designed for use with M-R-S tractors has been announced jointly by Wooldridge Mfg. Division, Continental Copper & Steel Industries, Inc., of Sunnyvale, Calif., and the M-R-S Mfg. Co., of Flora, Miss.

With heaped capacities ranging from 10.5 to 32.5 cubic yards, the five new models have special traction masts for use with the exclusive M-R-S tractors' hydraulic-weight-transfer system. This shifts the scraper weight forward to the tractor drive wheels when extra traction is needed.

M-R-S four-wheel tractors are available in 180 to 335-hp models. The new scrapers are designated as Wooldridge M-R-S Models OS-80, OS-90, OS-152, OS-200, and OS-260.

Among features of the scrapers are open-bowl design, stabilized balance with extra-low center of gravity, true boiling bowl loading, large low-pressure tires for greater flotation, simple cable reeving, and full-power-forward positive pivot-tilt ejection.

The specially manufactured Wooldridge units are designed to be used only with M-R-S tractors.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 113.

Small simple level is sturdy and precise

■ A small simple builders' level said to offer the sturdiness and precision usually associated with more expensive equipment is described in literature from Wild Heerbrugg Instruments Inc., Main and Covert Sts., Port Washington, N. Y.

Particularly suited for the construction site, the Wild Model N-O has an 18-power internal-focusing telescope with coated lenses. Two adjusting knobs are located on the right, next to the telescope focusing knob and the azimuth fine-adjustment screw. There is no aximuth clamp because the telescope is tightly mounted and turns under smooth friction in the vertical axis.

Open tubular and circular levels are protected. The level housing and telescope tube are cast in one unit. A circular level is provided for coarse leveling.

Like all Wild leveling instruments, the Model N-O is designed so that all leveling operations can be performed from one position.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 33.

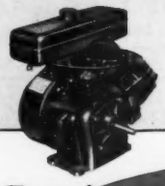
Continental Red Seal®

Rex 3½ yd. Adjusta-Wate Moto-Mixer, pouring pavement in Milwaukee. Power, Continental Red Seal F140.

means Dependable Power

In addition to its large engines, Continental builds an outstanding line of heavy-duty air-cooled four-cycle models for industrial applications requiring 2 to 3 h.p. (AU series illustrated). Advanced engineering gives them easy starting, high dependability, and unusual lugging capacity at low speeds . . .

Options: patented and exclusive Contex® external ignition system, low-level ignition cut-off, 6-1 reduction gear, and other features. Available also for use on kerosene . . . For information on these models, address Air-Cooled Industrial Engine Division, 12800 Kercheval Ave., Detroit 15, Mich.



All through the construction industry, you find Continental Red Seal engines accomplishing two important things. One is furnishing power to do the world's work; the other, building prestige for specific makes of equipment. The Red Seal line includes models engineered to a wide range of building applications, and meeting those needs completely . . . turning more and more users of mixers, pumps, compressors and other specialized machinery to makes which feature this extra-dependable power.

•

PARTS AND SERVICE FACILITIES EVERYWHERE . . . NEAR AS THE NEAREST PHONE

Continental Motors Corporation

MUSKEGON • MICHIGAN

6 EAST 45TH ST., NEW YORK 17, NEW YORK • 3017 S. SANTA FE AVE., LOS ANGELES 58, CALIF.
8218 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 910 S. BOSTON ST., ROOM 1008, TULSA, OKLA.
1252 OAKLEIGH DRIVE, EAST POINT (ATLANTA) GA.

AMERICAN PILE SHOES

SAVE TIME
PREVENT TROUBLE
on your pile driving jobs

- EASY TO APPLY—Nail-holes are provided for rapid, permanent application.
- STRONGER—American Pipe Shoes are made of ¼" steel plates, accurately formed and solidly welded.
- CAN'T COME OFF—Bending holes are provided to permit tailor-made fit. Obstructions cannot push or tear shoe from pile.

Dimensions – Prices

Shoe	For Piles	"A"	"B"	Weight	List Price
No. 1	6" to 9" diam.	7⅝"	9¾"	5½ lbs.	$2.30
No. 1½	8" to 11" diam.	9"	11½"	7½ lbs.	2.60
No. 2	10" to 14" diam.	11"	13¾"	11¾ lbs.	3.90

The American Pulley Company

4200 Wissahickon Avenue • Philadelphia 29, Pa.

Two new four-wheel-drive tractor shovels designed to get and retain heaped bucket loads

These new Hough Payloaders feature 40 degrees of "breakout" at ground level.

■ Placed in production after five years of development, two new Hough Payloaders introduce new tractor-loader features reported to give heaped loads faster and with greater safety to the operator. Their outstanding feature is a design that provides 40 degrees of "breakout" at ground level rather than at the customary 3 or 4-foot carry position.

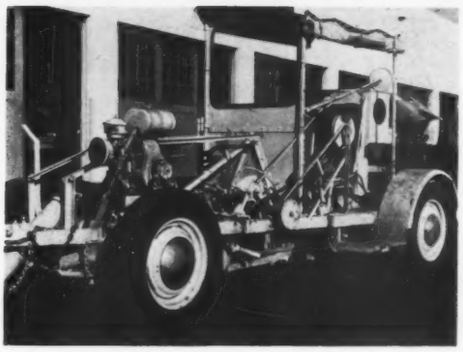
Also contributing to their ability to get heaped loads is the loaders' "pry-out" action, accomplished by break-out pads that act as a fulcrum against the ground for leverage. During the bucket's breakout, the opposing load forces are transferred to the ground through the pads rather than to the axle, wheels, and hydraulic system.

Another advance is a marked improvement in driver visibility and safety, the result of a combination of underslung boom-arm design and positioning. The need for safety guards or screens to protect the driver from the boom-arms has been eliminated. Adding to safety and speed of operation is the fact that loads can be carried closer to the machine, and at a lower level than usual, providing greater stability.

The new Payloaders—both four-wheel-drive models—are designated Models HU and HH, and have heaped capacities of 1 and 1½ cubic yards, respectively. The lifting and dumping heights of these new models are higher than average. Both, it is claimed, have more horsepower and weight in relation to bucket capacity than competitive rubber-tire models.

Other features include sealed pressurized hydraulic systems and 12-volt battery systems on the gas-powered units, with battery box and hydraulic oil reservoir mounted behind the driver's position for easy accessibility. Torque converters and full-reversing transmissions, double-acting hydraulic rams with chrome-plated piston rods hydraulic brakes, and power steering are standard on both models. Load-shock accumulator devices are available optionally.

For further information write to Frank G. Hough Co., 762 Seventh St., Libertyville, Ill., or use the Request Card that is bound in at page 18. Circle No. 135.



Case history: This combination line-sweeper and paint-gun carriage was designed and shop-built by highway engineers of the California Department of Public Works to make road-maintenance work faster and easier. Powered by a Kohler K-90-RT engine producing 3.6 hp, the rig has six 10-inch-diameter brushes turning on a single shaft just ahead of the paint-gun assembly. Because clean dry pavement is required for firm bonding of painted highway stripes, the rig saves time and labor by combining two operations in one, according to Earl E. Sorenson, equipment engineer of the state's highway division.

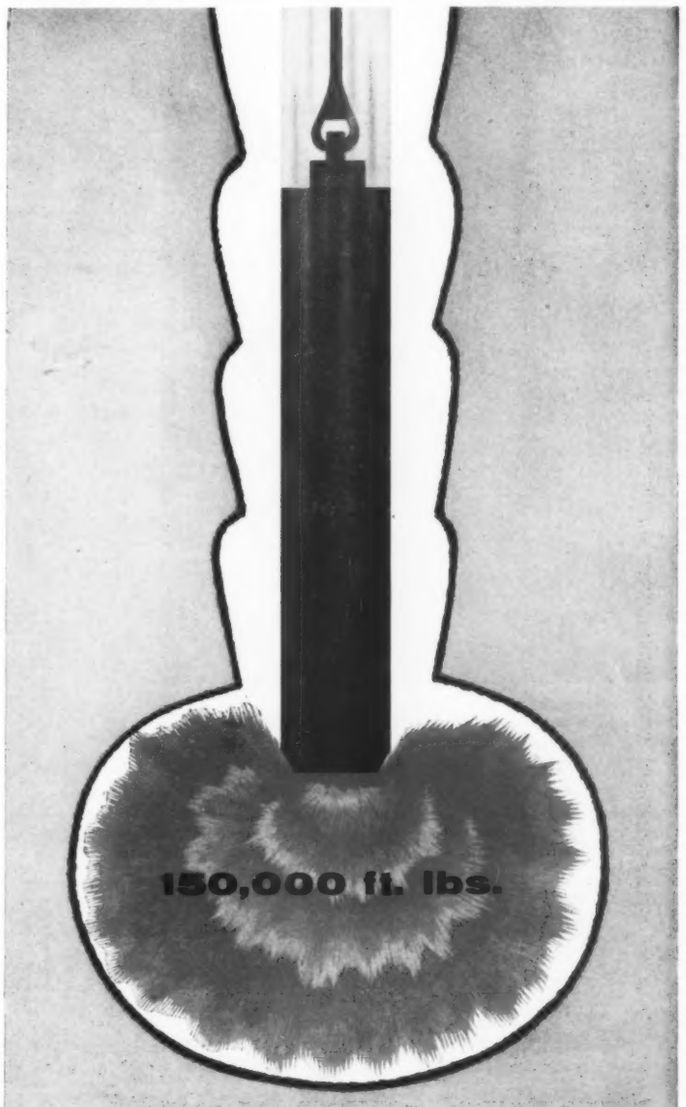
Don't Let Water Stop You!

The Manu-Mine organization can help you solve your difficult ground water problems through its contracting and consulting service. Specialists in:

1. Stopping the flow of water through walls, foundations, geological strata, etc., by chemical soil solidification
2. Stabilization of soils around foundations and footings
3. Water reservoir rehabilitation and construction
4. Ground water studies
5. Geological and mining studies
6. Air-placement of concrete
7. Highway engineering and aerial photography
8. Water control in tunnels

Let us know your problem and we'll be glad to discuss it with you. Call or write:

Manu-Mine Research & Development Co.
P. O. Box 167, Reading, Pa. **Telephone: 6-4926**



NOT uncertain bearing by friction through fill and unreliable soil strata

BUT BEARING IN DEPTH in or on granular material or rock.

if **YOU** can...

Insist on the **BEST** in Foundations

Planning construction? Let us help plan your next meeting with a speaker and color slides.

FRANKI FOUNDATION COMPANY
103 PARK AVENUE, NEW YORK 17, N.Y.

MANAGEMENT

Efficiency and economy:

Detailed management control enables the Metalweld firm to keep close check on operating costs. Here President S. John Oechsle (right) looks over a cost report with Joseph Barber, controller and assistant secretary. *C&E Staff Photos*

bywords of the successful dealer

This Philadelphia equipment distributor has built both his sales volume and reputation on good business methods

by WILLIAM T. DARDEN, assistant editor

A complete file of manufacturers' brochures enables this dealer to personalize its direct-mail advertising by selecting material aimed at the customer's particular needs.

Most efficient business methods result in two-way economy—savings, that is, to both the company and the customer. But there are some methods of business operation which, while keeping management's costs down, also represent *direct* savings or service to the customer. Three such methods are the pillars on which Metalweld, Inc., of Philadelphia has built both the business volume and the reputation of its Construction Equipment Division.

Metalweld's dealership represents nine major construction machinery manufacturers in a sales territory of 17 counties around Philadelphia. But this dealer is known and respected far beyond that area both as an expert sales-service organization and as the firm that produced the Associated Equipment Distributors' 1953 president, S. John Oechsle.

In the 24 years he has been selling construction machinery, John Oechsle has emphasized service, direct-mail advertising, and detailed management control of operations. The results speak for themselves. His service setup is earning the firm an ever widening reputation for dependability, while guaranteeing the contractor better performance from his equipment. His personalized direct-mail advertising is producing sales at the same time that it answers the customer's individual needs. And his control accounting system is resulting in an efficiency of operation that increases profits and permits savings to the client.

In the last few months, the firm has been expanding its operations along these lines—not to mention its physical setup—to facilitate handling of its newest account: the International Harvester Co.'s line of tractors, tractor attachments, and other heavy

Part of Metalweld's new and rental machinery is lined up in the equipment yard in north Philadelphia. At left are Schield Bantam truck and crawler-mounted cranes; at right, some of the 50 Worthington compressors available for rental.

Two Worthington air compressors get overhaul jobs in the Metalweld service shop. The firm's reputation as an expert service organization has traveled far outside its 17-county sales territory.

Metalweld's 200-foot-long by 80-foot-wide service shop contains complete facilities for the repair of all types of construction machinery. The Niles 10-ton traveling crane (top) does heavy lifting jobs. At center, a freshly painted Worthington truck mixer awaits loading onto a truck for delivery to a customer.

equipment. The addition of this big tractor line is requiring some building, increase of personnel, and revision of operations, but no change in policy is contemplated. Rather, the use of Oechsle's three efficiency methods will be intensified and expanded to include the I-H account.

Management

First of all, this distributorship has a young alert management. Oechsle himself, as president, is in his forceful fifties, and though he by no means qualifies for the adjective, he is the "old man" of the executive staff. His son, John, Jr., is at 30 general manager. N. N. Economou, sales manager; Joseph Barber, controller and assistant secretary; E. F. Watson, assistant sales manager; E. B. Shepard, manager of tractor sales; and Trevett R. Moore, advertising, sales promotion, and personnel manager, are all on the young side of middle age.

Teamwork in this management setup is excellent. Each Tuesday at

(*Continued on next page*)

BUILT for ROUGH SERVICE

CIRCLE D
Weatherproof
SPOT *or* FLOOD

Circle D portable and permanent spots and floods are specially designed for severe industrial service indoors and outdoors. Patented spring-mounted base and seal design absorbs shocks, prolongs lamp life, prevents loose lamps. Permanent models available in single or cluster units, standard or high voltage. No other lamp at any price can match Circle D for dependable performance.

MODEL 150

MODEL 101

Manufactured Exclusively by

Write us for Bulletins or call your nearest distributor

NEW YORK
Grayhar Electric Co., 21-15 Bridge Plaza, N., Long Island City, EX 2-2000
Wehle Electric Co., 473 Ellicott St., Buffalo, WA 3270

NEW JERSEY
Franklin & Smith, Inc., 137 Franklin St., Jersey City, JO 4-2510
Parr Electric Co., 40 Austin St., Newark, BI 3-2340

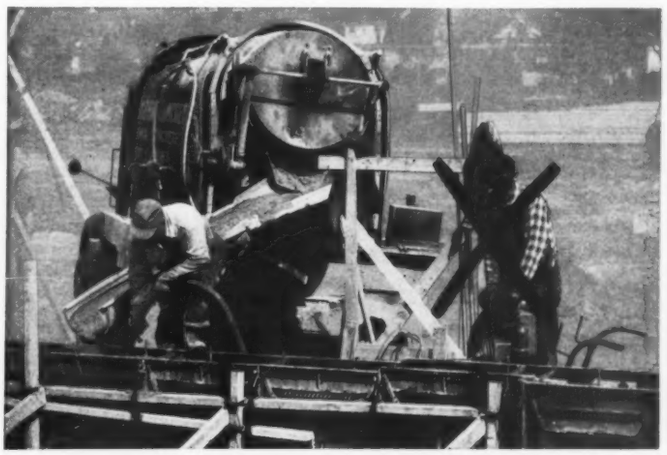
MASSACHUSETTS
Ellington Electric Co., 53 Daniels St., Millis, Millis 386

PENNSYLVANIA
Lloyd E. Holley Co., 1430 Liberty St., Harrisburg, HA 3-3161
J. B. Supply Co., 3435 Babcock Blvd., Pittsburgh, PE 4-8033
Allen Electric Co., 524 Hamilton St., Allentown, HE 5-9515
UHR Electric Supply Co., 312 So. 4 St., Philadelphia, MA 7-3756

WEST VIRGINIA
Capital City Supply Co., Broad & Smith St., Charleston, CA 2-2161

OHIO
Buckeye Power Sales Co., 1990 E. Main St., Columbus, EV 5322

Natale Machine & Tool Co. 339 STATE HIGHWAY 17. CARLSTADT, NEW JERSEY



NEW MASTER "1-MAN" VIBRATOR CUTS VIBRATING COSTS IN HALF

Only 25 lbs. Easy to handle.

It weighs 25 pounds! It's all in one piece! It plugs into any regular 115 Volt AC or DC electric line . . . and with no heavy engine or motor to drag around, one man handles it easily.

The motor is sealed in the vibrating head, so there's no flexible shaft to get out of whack; no oiling or greasing problems; no kinking troubles.

No field maintenance is necessary: when motor head needs attention, snap it off and snap on a spare.

The vibration actually penetrates farther and leaves fewer voids in the concrete than old-style vibrators.

The price is *low*. The design has eliminated so much cost, and no special power source is required, but the big saving comes in use. Write for folder or ask your Master distributor for a free demonstration. You'll see exactly how the Master "1-Man" can cut your vibrating costs *at least* 50%.

MASTER VIBRATOR COMPANY
154 Stanley Ave., Dayton 1, Ohio

MASTER

◄ The acquisition of the International Harvester line of tractors has required some expansion in Metalweld's physical (as well as operational) setup. This new building was put up in about 20 days to house the greatly expanded parts department.

(Continued from preceding page)

the close of the work day Oechsle gets together with his executives for an informal "ironing out" session. This weekly meeting is held "come hell or high water" because Oechsle believes every man has something to contribute to the over-all operation.

There is the same tight teamwork among the employees. Nick Economou's eight salesmen (more are being hired to handle the increased volume of business) call into the office at least once a day, report in person on the average of twice a week, and are all present for monthly sales meetings. The salesmen are given a general knowledge of both equipment operation and repair, with the training program geared to each man's individual background, experience, and capabilities.

Sixteen well trained mechanics make up the service department, which is managed by J. S. Eckler. Nine parts men, under department manager J. F. McNamara, have charge of filling orders from a stock of some 15,000 separate parts (approximately 9,000 parts were added to the inventory by the acquisition of the I-H line alone). Six others handle accounting, advertising, and personnel details.

The firm's north Philadelphia plant consists of three buildings. A 200×80-foot two-story-high shop building has offices on both levels in the front. The parts building, which got a new front less than a month after the I-H account was acquired, measures 80×40 feet. Another one-story structure, just remodeled, provides 2,500 square feet of showroom area.

Service shop

Metalweld's shop is fully equipped to handle repairs on virtually every type of equipment. A Niles 10-ton overhead traveling crane does heavy lifting jobs, while smaller hoists are available in the engine repair room and other sections.

Complete equipment for machining parts is located at one end of the shop. A separate room houses the engine rebuilding bay. A fleet of International service trucks and several White trucks are used for hauling equipment to and from the shop.

In the parts building, two levels are devoted to storage bins. In the front of this building, the usual parts counter is efficiently manned by more than half a dozen men. Parts are listed by code number in big reference books placed within easy reach of any attendant, and it is but a step to the storage bins in the back. The parts department is open six days a week, but the firm does its best to fill a special rush order at any time, night or day.

Like every other department just now, the accounting setup at Metalweld is undergoing some changes. Oechsle and his executives are in the process of studying various machine cost-accounting systems prior to installing one of these modern systems. Not that the company operations would change drastically, but the present control operations would be that much more efficiently carried out.

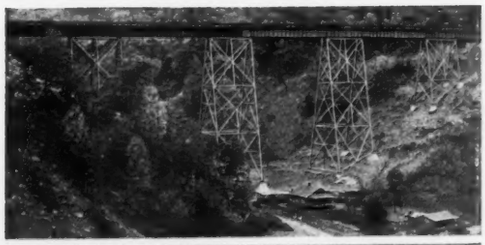
Control accounting

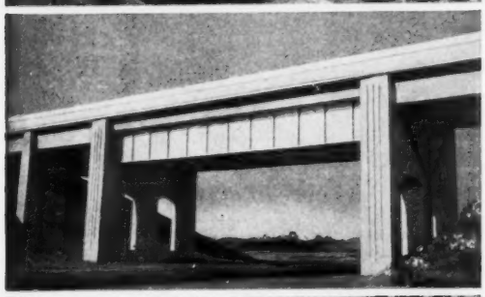
This management control system is something all department heads are completely sold on. Its application ranges from a daily account of costs, tabulated by cost centers (departments), to a detailed breakdown of parts on hand. Sales and costs of sales are tabulated daily, with breakdowns by unit and by salesman. This gives the firm a running picture of costs, providing the kind of cost control a business needs to achieve efficient operation.

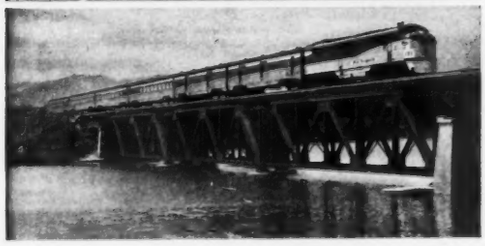
Accounts also are tabulated regularly, enabling the sales department to analyze both the equipment needs of a contractor and to determine which accounts are good potentials and which remain practically dormant.

Protect Bridges with . . .

FABREEKA . . . Proven







BY OVER 20 YEARS OF USE ON BRIDGES!

FABREEKA PADS on bridges distribute loadings evenly and compensate for irregularities of bearing surfaces. They also prevent chipping and flaking of concrete and grout, seal out moisture and dirt, reduce transmission of impact shock, and very substantially cut the labor cost of erection. Bridge building contractors find them more economical and convenient to install. Furnished cut to size with bolt holes as specified, Fabreeka Pads are simply dropped over the anchor bolts; require no painting, and are not affected by weather conditions. They are made of a scientifically designed and manufactured material, have exceptionally high damping qualities, and remain permanently resilient under all service conditions.

FABREEKA Pads

For the Mounting of Heavy Machinery to Protect Foundations and Equipment

Be sure to investigate the use of Fabreeka on the next Bridge you design or build . . .
Write for engineering data on the application of Fabreeka to Bridges and Under Heavy Equipment

FABREEKA PRODUCTS COMPANY, INC.

222-U Summer Street, Boston 10, Massachusetts

NEW YORK • CHICAGO • DETROIT • SPARTANBURG • PHILADELPHIA • PITTSBURGH • OAKLAND

Finally, the accounting department keeps tight records of parts on hand. This prevents overstocking, which can give a dealer a lopsided inventory and uselessly tie up much-needed operating capital.

Trade-ins—one of the mixed blessings of this business—are something this firm keeps a close watch on. There is always careful inspection—first by a salesman and later by a qualified mechanic—of any piece of equipment the company accepts on a trade-in.

Like every other phase of this business, a trade-in is colored by such circumstances as the prospective sale and the value of the customer as an account—not to mention the condition of the used machine. If competing dealers set a pattern of overtrading to effect sales of new equipment, the Metalweld organization will sometimes be forced to match them—"up to a point." "But you can't give your profits away very often; that kind of operation will boomerang on both you and the customer in time."

Rentals

Metalweld does a good equipment-rental business in its 17-county territory. Both contractors and industrial concerns account for this business. The volume of rentals is in compressors (approximately 50 of these units are available for lease), cranes, and shovels.

Credit operations are an important function of the financial department at Metalweld. Careful study is made of the contractor's rating, job potential, and—most important of all—jobs currently under contract in arranging credit terms.

Advertising

Trevett Moore's advertising program is as personal as the other functions of the company. Leaning heavily on the direct-mail approach, it tries to contact each customer once every two to three weeks. Self-addressed reply cards are used liberally to give the company a check on the effectiveness of the program.

Metalweld's mailing list is broken down by types of customers: Contractors (all types), producers (cement, aggregate, and other materials), industrials (railroads, oil companies, and other noncontracting concerns), and government (highway men, engineers, and others responsible for design and specifications).

By means of the accounting department's record of sales, the advertising department can determine the current likely needs of a customer. This enables the advertising department to select just the right advertising matter (from that furnished by the manufacturers) for the individual customer. The records of salesmen's calls are referred to frequently in planning advertising efforts aimed at the particular account.

As a service to its customers in the Metalweld territory, the department has recently drawn up and handsomely printed a 102-page booklet containing useful information (tables, formulas, and the like) for contractors. The booklet's popularity outside the territory has required extra printings, and for a cost-of-printing fee the publication is mailed anywhere in the country.

Growth

Operation of Metalweld's Construction Equipment Division (one of three distinct operations in the Metalweld firm) dates back to 1931, when Oechsle sold a portable compressor his firm had been manufacturing to the Worthington Corp. Oechsle became Worthington's representative (making it the oldest Worthington dealer and the largest, volumewise), and then through the years added other accounts.

Today Metalweld also handles Baldwin-Lima-Hamilton cranes and shovels; Schield Bantam excavator cranes, Clyde pile-driving equipment and hoists, Hetherington & Berner asphalt plants and paving equipment, Pitman cranes and smaller lifting cranes, Hercules engines, Esco buckets and bucket teeth—and, of course, the I-H tractor line and tractor attachments.

Metalweld, Inc., started out in 1919 as a welding firm, taking its name from the service it offered, and that operation is still carried on in one of the company's divisions. A third division is devoted to protective coating of tank cars, trucks, drums, valves, and other containers or carriers of corrosive liquids. The welding and protective coating operations are conducted at another building less than a mile from the equipment division's facilities.

Importance of AED

Being a past president and still very active member of the Associated Equipment Distributors, John Oechsle is naturally a booster for that organization. He believes the exchange of ideas and experiences that goes on at the annual meetings is invaluable, and points out that manufacturers have supported and encouraged the organization.

"The equipment distribution business is a comparatively new industry," Metalweld's president declares, "but it is fast coming into its own. We need to stress efficiency and economy—and learn the effective application of time and cost-saving methods from each other—if we are to build our profits and customer satisfaction."

THE END

2 Manitowoc One-Yard Hoes lick tough hardpan on refinery job for BECHTEL CORP. at Anacortes, Washington

When the going got rough and other units scratched, picked and hacked to the tune of lost time and low production — it was time to bring in the Manitowocs!

The two "1600" hoes waded in and the hardpan took a pasting. Mile after mile, these "work horses" dug in — 25 ft. deep at times — and came up with full dippers of pay dirt every time.

The trench had to be 9 ft. wide in many spots and Manitowoc's boom strength and stability enabled it to trim trench edges clean and neat without traveling. This superior feature — plus Manitowoc's 37' reach resulted in no lost motion and more miles of trench per shift.

Need a big-producing hoe? Get the facts on the Manitowoc 1600. Manitowoc Engineering Corp., Manitowoc, Wis.

MANITOWOC
SHOVELS 1-5 YD. SpeedCrane CRANES 20-100 TON

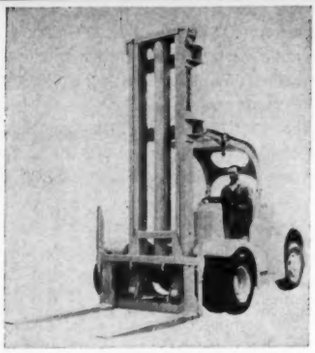
New lift truck announced

■ A 12,000-pound-capacity lift truck has been announced by The Hyster Co., 2902 N. E. Clackamas St., Portland 8, Oreg. With the new addition, Hyster lift trucks are now available in 1,000 to 18,000-pound capacities.

The new Model RT-120 has a special overhead tilting mechanism said to reduce stress in the frame and tilt mechanism. The standard lift height is 17 feet 6 inches; optional heights range from 8 feet 2 inches to 24 feet. The unit's outside turning radius is 180 inches.

Maximum speed is over 19 mph in either forward or reverse. A 6-cylinder International Harvester engine powers the machine.

For further information write to the company, or use the Request Card at page 18. Circle No. 156.



The new Hyster Model RT-120 lift truck has a 12,000-pound capacity.

Reproductions of drawings made in reduced size

■ Equipment that produces reduced-size photocopies of plans and blueprints on a continuous-flow basis is shown in literature from Peerless Photo Products, Inc., Shoreham, L. I., N. Y. The Peerless Neoflow camera makes reduced-scale copies of original drawings on a transparent medium, either vellum or cloth, from which multiple work prints are then made.

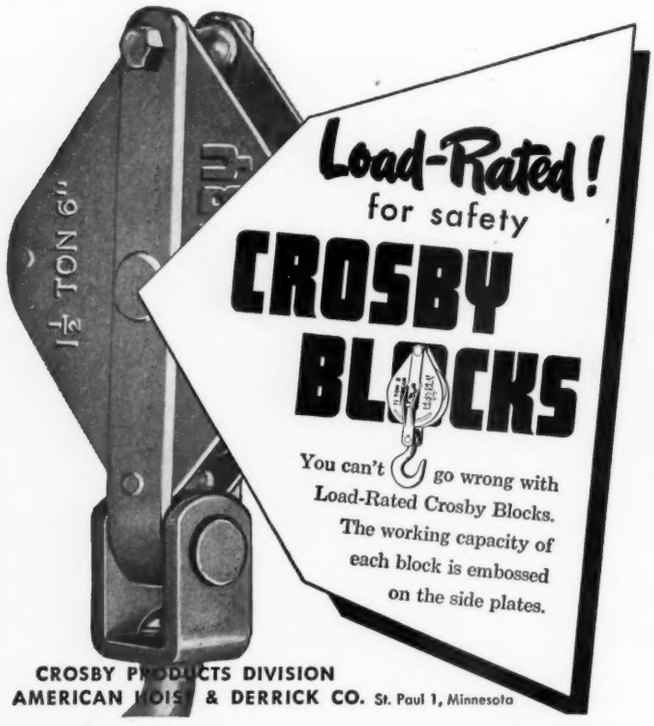
It is pointed out that in many respects the smaller copies are easier to handle and use, save filing space and shipping costs, and reproduce faster and cheaper than full-size copies.

The brochure gives complete operating instructions and specifications for the Neoflow camera and also describes a special continuous-processing unit designed for use with it.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 133.

Cummins promotes four

Four executive promotions have been made by Cummins Engine Co., Inc., Columbus, Ind., manufacturer of diesel engines. E. D. Tull is now executive vice president of Cummins; R. B. Stoner, vice president of personnel; and C. R. Boll, vice president of sales. P. J. Every is general sales manager for the firm. All four men were promoted following the annual meeting of the company.


1½ TON 6"
Load-Rated!
for safety
CROSBY
BLOCKS
You can't go wrong with Load-Rated Crosby Blocks. The working capacity of each block is embossed on the side plates.

CROSBY PRODUCTS DIVISION
AMERICAN HOIST & DERRICK CO. St. Paul 1, Minnesota

everything you need for easy soil sampling

1. **portable** Carry it in your car.
2. **easy to use** No experience needed to operate.
3. **dependable** Recovers accurate, undisturbed samples.

the ACKER SOIL SAMPLING KIT

More than 30 years of soil sampling experience all over the world has proven that this kit is the most versatile, portable collection of soil sampling tools you can buy!

LOW COST — NOTHING TO GET OUT OF ORDER —

WRITE TODAY FOR PRICES AND BULLETIN 30, C&E

ACKER DRILL CO., Inc. 725 W. Lackawanna Avenue Scranton, Penna.

FAST, COMPLETE COMPACTION OF 12" MACADAM BASE COURSES

Specified density of base courses of rock, slag, soil-bound macadam, gravel and sand up to 12" thick is achieved in jig-time with the JACKSON MULTIPLE VIBRATORY COMPACTOR. Frequently no more than one pass is required. Likewise, one pass suffices to solidly fill all voids from top to bottom when sufficient dry fines have been spread. With a standard width of 13', 3", working speeds up to 60 FPM and reverse travel of 5½ MPH, this machine offers single course compaction at its best — tremendous opportunity for time-and-money savings.

GRANULAR SOIL SUB-BASES — PAVEMENT WIDENING

It is equally advantageous in compacting granular soil sub-bases. And by towing the compacting units in tandem at the side of the tractor, any granular material used in flexible base course widening can be compacted to specified density in one pass.

LARGE AREA FILLS: Nothing approaches the efficiency and convenience of this machine in compacting granular soil fills such as bridge approaches, sub-bases for large concrete floors, parking lots, etc. It quickly achieves desired density and individual units may be sub-contracted and even fitted with operating handles to suit every condition and to get into the really tight places. Interchangeable bases 12" to 26" in width, are available.

IN TRENCHES — CLOSE TO FOOTINGS, ETC.

The manually-guided, self-propelling JACKSON COMPACTOR (similar to one of the compacting units used in the MULTIPLE, fitted with operating handle) has proved exceedingly successful on thousands of granular soil compaction jobs and is widely used for bituminous pavement patching. Operated from a Jackson Power Plant on auto trailer having quick pick-up device for loading and carrying Compactor.

See your JACKSON DISTRIBUTORS or write us for complete information.

JACKSON VIBRATORS, INC.
LUDINGTON, MICHIGAN

Designed for mounting on a dump truck, the McConnaughay HTD-B asphalt mixer makes it possible to haul, mix, and lay paving with a single unit.

New asphalt mixer mounts on dump truck to make mobile versatile patching unit

■ A new McConnaughay asphalt mixer is designed for mounting on the rear of a dump truck to make a maneuverable patching unit that can move easily from one location to another. This enables a small crew to haul, mix, and lay asphalt with a single unit.

The new Model HTD-B mixer handles up to 5 tons of hot-mix or 10 tons of cold-mix per hour.

The truck-mounted mixer is 6 feet wide, 2 feet 6 inches deep with the shoveling tray up, and 4 feet deep with the tray in working position. The unit stands 4 feet high not including the stack, and 7 feet with the stack. Its total weight is 1,160 pounds.

McConnaughay asphalt mixers are sold through the Asphalt Equipment Co., Inc., of Fort Wayne, Ind., which is the national distributor for this equipment.

For further information write to K. E. McConnaughay, Lafayette, Ind., or use the Request Card that is bound in at page 18 of this issue. Circle No. 144.

Heavy-duty dump bodies have 15-yard capacity

■ A new series of heavy-duty dump bodies designed especially for heavy excavating and hauling jobs is announced by Hercules Steel Products Corp., Galion, Ohio. The new Hercules series HD dump bodies are built especially for shovel loading of rock, riprap, shale, and gum clay, and for other severe loading and hauling operations.

Standard lengths of 12 to 16 feet with capacities to 15 cubic yards are available with either telescopic or underbody hoists. The heavy bodies are constructed of 8-gage shells, ¼-inch steel-plate corner posts, and full I-beam understructures.

For further information write to the company, or use the Request Card at page 18. Circle No. 120.

With all 4 primary contractors using Jersey Spreaders to lay both the rock base and fine cushion on West Virginia's new 88 mile Turnpike, as much as 22,000 tons were laid in a single day! . . . easily attached to any tractor, Jersey Spreaders have proven the fast, economical way to spread material.

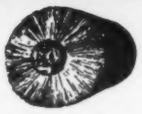
Write now for complete information and illustrated literature.

JERSEY SPREADER

TRACTOR SPREADER COMPANY

MANUFACTURERS OF THE JERSEY SPREADER

HASBROUCK HEIGHTS, NEW JERSEY



Trade In Your Old Cores

FLASH ! ! DO YOU KNOW

WE MANUFACTURE

ROTARY SWEEPER CORES

Most Any Popular Make To Fit

GRACE • HOUGH • LULL • ROSCO

LITTLEFORD • DETROIT HARVESTER

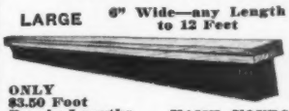
and Others - Send Your Specs

REFILLS—SPECIALISTS WITH SPRING STEEL WIRES AND FIBRES

REPAIRS - ANY MAKE SIZE OR TYPE - 24 HR. SERVICE

PECKERWOOD STEEL WIRE DRAGS

LARGE 6" Wide—any Length to 12 Feet



ONLY $3.50 Foot

Buy in Lengths Assemble Your Own

NAME YOURS

Drags Not Staple Set

SMALL

Fits Your Frame

3" Wide 15" Long Now $2.50 ea.

Prices Subject to Change Without Notice

SINCE 1928 VAN BRUSH MFG. CO.

327 SOUTHWEST BLVD - KANSAS CITY, MO.

Thru-Way the Modern Way

with an Assist by a ROGERS TRAILER

Today's high speed of travel over the modern freeway is comparable only to the despatch and efficiency with which these highways are built.

An example of ingenuity in building the New York State Thru-Way is to be noted on the part of Mt. Vernon-Healy and Gammin of Arden, New York, under the direction of J. D. McFall, Project Manager.

A 450 H.P. diesel engine and 2400 volt generator supplies electricity to power a P. & H. shovel.

The two related units have been mounted firmly on the Rogers Trailer which serves as a base for operation and also provides quick, easy means of movement as the work progresses rapidly.

Think of Rogers as originators and manufacturers of a full line of heavy duty *trailers* including general utility models and types adapted to all special heavy hauling operations. Write for the Catalog.

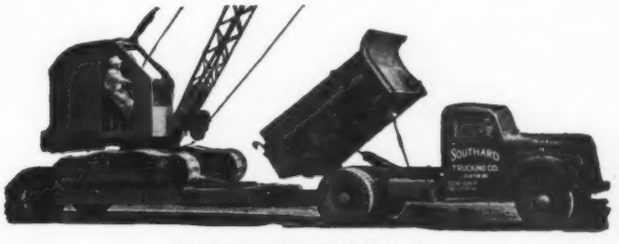
EXPERIENCE Builds 'em

PERFORMANCE Sells 'em

ROGERS BROS. CORP. ALBION, PENNA.

Export Office: 50 CHURCH ST., NEW YORK 7, N.Y. U.S.A.

Cable Address: BROSITES



Attaching loaded tilt deck trailer

With its heating capacity boosted in order to reduce mixing time, Silver State Construction Co.'s. Madsen asphalt plant has been able to increase production.

MANAGEMENT

Unit costs show decreases as

Keeping an asphalt plant turning out quality material at peak capacity, A. D. Drumm, president of Silver State Construction Co., Inc., Fallon, Nev., is giving his customers a good product and adding more figures to the black side of his ledger.

The company's cost-cutting, production-boosting operation, now three years old, is the result of Drumm's consideration of what he refers to as the four "forgotten factors" in asphalt production: material, the application of bitumen, the size and condition of the pugmill, and heat. Experimenting with all of these, Drumm has boosted the output of his Madsen plant to the 300 to 350-ton-per-hour range without sacrificing the quality of the mix.

As far as material is concerned, the mineral filler in Nevada often demands a compromise between what is available and what is theoretically perfect. Sometimes it is poorly graded, having 15 per cent fines passing the 200-mesh sieve. Frequently, the finer the material, the wetter it is in the raw stockpile. Too frequently, Drumm believes, specifications written for the poorer range of materials penalize an asphalt-production setup working with a better class of aggregate. Drumm believes the plant operator should have the freedom to operate at capacity or higher in good material.

The second of Drumm's "forgotten factors" is the method of bitumen application. His plant injects hot asphalt into the heart of the mix, saving valuable seconds on the mixing time.

COMPACTING EARTH FILLS

ON HIGHWAYS, AIRPORTS AND DAMS, new records are being set every day by Southwest Compaction Rollers. Here two 75-ton rollers and Cat DW21 tractors are compacting 6" to 12" lifts with only 4 to 6 passes. They are keeping pace with the largest earth-moving equipment working on 24-hour job schedules in the High Sierras.

ONE YEAR AHEAD of schedule! This record on a large earth fill dam is partially due to the improved high speed of compaction by Southwest Rollers which are used exclusively on this job.

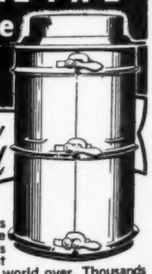
SPEED PAYS OFF! A fleet of four 50-ton Southwest Rollers, with Cat and Le Tourneau tractors, use their weight, their kneading action of tires and extra oscillating freedom to permit faster traveling.

ADAPTORS FOR TRACTORS, most models or types, are available at Southwest. On highway and housing projects, small 20-ton Compaction Rollers can be towed by motor graders or other power equipment.

VERSATILE! Any standard 4-section Compaction Roller can be converted in a 3-, 5-, or 6-section roller. Parts for conversion are available as a complete package.

CONSTRUCTION MACHINERY DIVISION
Southwest Welding & Manufacturing Co.
ALHAMBRA, CALIFORNIA

For the FINEST CONCRETE PIPE You Need the FINEST FORMS!



THE "Quinn" Standard

Backed by over 40 years of reliable service, the QUINN STANDARD is recognized as the finest concrete pipe form the world over. Thousands of pipe manufacturers, from the smallest to the largest, look to Quinn for equipment to produce the finest concrete pipe at the lowest possible costs.

• **QUINN HEAVY DUTY PIPE FORMS**

For making pipe by hand methods by either the wet or semi-dry process. Sizes for pipe from 10" to 120" and larger. Tongue and groove or bell end pipe in any length desired.

WRITE TODAY for complete information and estimates.

Also manufacturers of
QUINN CONCRETE PIPE MACHINES

Quinn WIRE & IRON WORKS
BOONE, IOWA

ease asphalt output is raised

Control of temperatures, materials, and bitumen makes stepped-up plant production possible

The size and the condition of the mixer is the third factor considered. If the pugmill is not properly and continuously maintained, says Drumm, it loses a portion of its effectiveness through wear on the mixing components. To keep his pugmill at maximum efficiency, Drumm has increased the number of its paddles to 28. He also keeps a maintenance welder on the job every night the plant operates.

While the average horsepower on a 4,000-pound pugmill is 75, Drumm uses double that amount. And this, coupled with a 6-second asphalt-injection cycle, has helped step up plant output considerably.

Probably the most important factor of all, according to Drumm, is heat. After a considerable amount of experimentation, he has come to the conclusion that an increase of 25 degrees over the minimum requirement will reduce mixing time by 20 per cent. This increase in the heat seems to be accompanied by a proportionate decrease in mixing time, for an increase of 50 degrees will reduce mixing time by about 40 per cent. This ratio, Drumm believes, reaches a point of diminishing returns economically before the critical temperature of the bitumen or aggregate is reached.

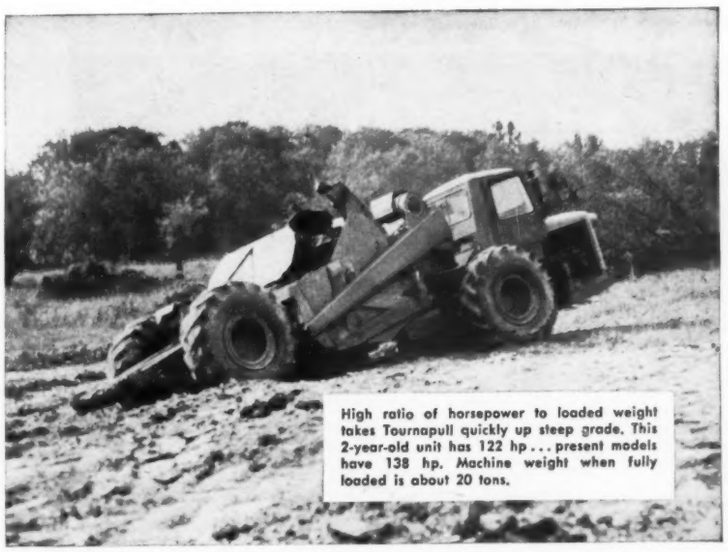
The increased production of the company's asphalt plant is made possible by the increased heating capacity of the plant, Drumm states. The plant uses 75 horsepower on the inlet fan and 100 horsepower on the exhauster fan, with an 8-inch burner. And by reducing the mixing cycle to less than 30 seconds, Drumm secures not only a higher per-hour production from the plant, but production at a lower unit cost.

In experimenting to produce a good product in less time, Drumm reduces mixing time until the mix can be seen to deteriorate. Then he restores the quality of the mix, either by lengthening mixing time or increasing temperatures. Within reasonable limits, Drumm will restore quality to a mix by increasing the temperature rather than the mixing time.

But mixing time alone, Drumm believes, is no assurance of a quality product. Drumm says he would like to see more studies made of the relationship between diminishing mixing time and increasing heat capacity. He has made several studies of this himself.

On one contract, where material was dirty and poorly graded, the deterioration could be seen easily when mixing time was reduced to 15 or 18 seconds. On another job, where material was well graded, sandy, and on the low side with 200-mesh fines, the deterioration could be detected in the 12 to 10-second mixing cycle. In both instances, plant heat was about 25 degrees above minimum.

Under Silver State's present setup, Drumm has invested a small amount of money to increase plant capacity. And he has cut costs and hiked plant output without sacrificing the quality of the mix. Now, by turning out a good mix in less time, he has achieved a high rate of production while lowering unit cost. THE END



High ratio of horsepower to loaded weight takes Tournapull quickly up steep grade. This 2-year-old unit has 122 hp . . . present models have 138 hp. Machine weight when fully loaded is about 20 tons.

In 35 days two 7-yard scrapers handle 50,000 yd. job

Although he had less than 7 weeks to move over 50,000 cubic yards at a park near Morrow, Ohio, Contractor Lester Oeder and his Superintendent Charles Hamilton assigned all dirtmoving to just two 7-yd. scrapers. Both were D Tournapulls. Their choice soon proved justified. The rubber-tired "D's" got to the job fast — they drove in under their own power at speeds to 28 mph—and they moved dirt fast!

Average 210 pay yards hourly

Typical 1800′ cycles took each high-speed Tournapull only 3 minutes. This includes time to load 6 to 7 pay yards of tough, heavy, sticky "ribbon" clay, and travel over adverse grades of up to 15% on the haul and 30% on return. In a typical 50-minute hour, the 2 machines delivered 33 loads (198 to 221 pay yards).

Continued high output like this let Mr. Oeder hold his work week to 48 hours, yet finish the job in 35 working days. In this time, the two 7-yd. "D's" moved all 50,000 yards of scraper dirt involved . . . 4 tractors, a grader, and a roller handled push-loading, cleanup, compaction, fine-grading, etc.

As might be expected, Owner Oeder and Superintendent Hamilton are well pleased with Tournapull performance. "The 7-yd. 'D's' are real production tools," they say. "They are very versatile and do a good job in heavy going."

Judge Tournapulls on your job

If you would like to check the "D" on *your own job*, we'll be glad to drive one in. Time its cycles, measure its performance for yourself . . . we're sure you'll find this 122 hp unit both a good producer in pusher fleets and a worthwhile "handyman" for cleanup work and other self-loading jobs. Call us to arrange the details.

Now available — FREE — a valuable new reference book — "Earthmoving, An Art and a Science". Its 60 pages tell how to increase output and lower costs. Written by experienced field engineers, checked by veteran dirtmovers. For your copy, write your Distributor.

DP-720-H-5

In one season, Oeder's 2 "D's" did all dirtmoving for:

- 70 soil-conservation stockponds. Water area each pond: ½ to 5 acres.
- 3 large stockponds. Water area each pond: 10 to 17 acres. Fill: 20 to 30 ft.
- 4 drive-in theaters.
- 1 subdivision, South Lebanon, Ohio. Put in 4000 ft. of streets.
- 1 park improvement job, moved 50,000 yds. to build new trailways and several parking lots. Work illustrated and described more fully in story at left.
- Schedule for the coming year, Mr. Oeder's 25th as a dirtmoving contractor, includes more stockponds, roadwork, industrial land-leveling, farm development. All scraper work will again be handled by Tournapulls.

Insure your future

For less than 25% of the cost of the original unit, you can get a 9-ton Rear-Dump to interchange with the Tournapull Scraper. You save money because all you need buy is the rear-dump body . . . rear wheels, tires, and brakes may be interchanged. Other hauled units also available, further reduce equipment inventory . . . put you in better position to profitably handle all kinds of future work.

LeTourneau-Westinghouse Company
PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Underpinning for bridge forms, designed by engineers of Atkinson's Long Beach office, is erected by a Bucyrus-Erie 88-B.
Ray Day Photos

MANAGEMENT

A concrete department means added efficiency on contractor's project

Through the addition of a concrete department to its organizational headquarters in South San Francisco, Guy F. Atkinson Co. has been able to achieve more accurate estimating and field efficiency, and at the same time train young engineers for responsible posts in the organization.

Usually referred to simply as a "form department", the concrete department is in line with the modern emphasis on engineering planning in complex million-dollar jobs. The formation of the department was a gradual affair, the result of Atkinson's attempt to meet changes in today's construction planning. Fifty years ago, contractors rarely employed engineers. As late as 1949, there were some five engineers on the Guy F. Atkinson main office payroll.

But fifty years ago is not today. Fifty years ago, Guy F. Atkinson could personally prepare bids which, by today's standards, were simple. Atkinson allowed about a dollar per cubic yard for forming, another dollar for placing concrete, and perhaps two or three dollars for material. Multiplying these amounts by the number of yards of concrete to be placed, he could figure his bid.

Such a procedure could hardly be used today. Atkinson's construction in the past decade has included numerous powerhouses—structures so complex that 30 to 45 square feet of forms per cubic yard of concrete was sometimes required. Some of the concrete for a powerhouse cost $60 per yard. And up to $45 of each cubic yard represented forming costs. Mistakes in bidding this type of work could be fatal for a company.

The concrete department now does a complete job, not only giving the complete form layout to the field, but designing plants, making the entire job layout, and determining what type of form should be used. On Pine Flat Dam, engineers designed a new type of concrete-placing cableway which reached a higher speed of operation than had ever been attained before.

The 65 engineers employed by Atkinson today are men capable of good design, estimating, job layout, and organizational planning. They are men able to take on the other engineering responsibilities which public agencies have discovered contractors can assume.

Atkinson is doing more and more of the latter type of work, setting its own form stakes, frequently running

Speedy Basement Digger Cuts Excavation Costs

LOOK AT THAT LOAD as the INTERNATIONAL DROTT Skid-Shovel uses exclusive Skid-Shoes with pry-out action to apply 11,500 pounds of break-out force to work. The heaped load is retained by 41° bucket roll-back and the paydirt is moved in third gear to the stock pile.

Operator finds INTERNATIONAL DROTT TD-9 Skid-Shovel works faster, handles easier on housing project

The Trowbridge Construction Company, Marshalltown, Iowa, is one of the thousands of contracting firms the country over that has discovered the fastest, most economical way to dig basements is with an INTERNATIONAL DROTT Skid-Shovel.

Here the TD-9 Skid-Shovel is shown starting 75 basement excavations on a new housing project in Marshalltown, and operator Terry Adams says:

"This loader is faster, easier to handle, with plenty of visibility so you can see the work you are doing. It tops all other loaders I've seen."

You'll know what Terry is talking about when you call your INTERNATIONAL Industrial Power Distributor for your demonstration. There are four sizes of Skid-Shovels—⅞, 1¼, 2 and 3 cu. yds.—and they all have Skid-Shoes and use pry-out action to supply 300% greater break-out force. Loading force is transmitted into the ground and the units transport heaped loads at ground level in high gear to speed every cycle. Call today for your demonstration and see how they'll cut your excavation costs.

FULL HEAPED LOAD is retained during transport and dumped on the stock pile without spillage. The highest lift, farthest pitch feature pays off big for loading out haul trucks with high bodies.

INTERNATIONAL HARVESTER

INTERNATIONAL® DROTT

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS
DROTT MANUFACTURING CORP., MILWAUKEE 8, WISCONSIN

Engineers untangle a knotty concrete problem over a drafting table. Through department planning like this, Guy F. Atkinson Co. has improved field efficiency and lowered job costs.

Centralized form work permits better bidding and estimating while new engineers are trained as future company officials

control surveys, designing intricate structures, and building models, which, like the one constructed of The Dalles Dam Spillway—are helping save money on jobs.

But this was not always the situation at the Atkinson Co. Before the new department was set up, changes in construction work practically forced the company engineers to prove their ability to take over responsible management posts. At one point it became necessary for engineers to design several jobs and lay out concrete plants.

The results of this work were so good that Pine Flat Dam was placed under engineer control from the start. A job in San Francisco followed, then work at The Dalles Dam on the Columbia River in Oregon. Long-term jobs already begun when the department was in the process of becoming organized were not disturbed. But new jobs being estimated and bid were planned from the start by engineering talents within the company.

Department organization

As the idea of a centralized form department grew, the older men in the company got together to pool practical information on methods and equipment which had saved money and speeded schedules in the past.

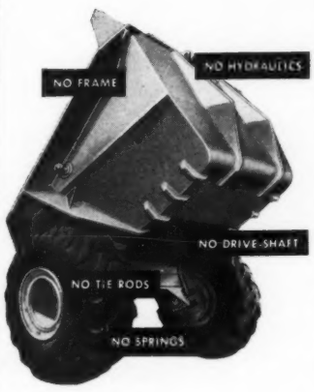
Vice president Dave Root of the Long Beach office contributed a wealth of information on his specialty —underwater work. Root, the man who helped build the Alameda vehicular tube under the Oakland Estuary years ago, also supervised the design of the retractable steel underpinning for the Arroy Seco Colorado Street Bridge. This is the structure which engineering professors from the California Institute of Technology personally visited to improve their conceptions of loading.

Veteran project managers Earl Jeunett and John Morton also contributed to the formation of the department. So did A. H. Steiner, the firm's dam-building and earthmoving specialist, and other superintendents and foremen. Only techniques which had proved themselves sound in the past were adopted for the new department. Newer and more efficient methods—like the use of high steel forms with high-tensile bolts—were adopted when they showed they could save money and improve the over-all schedule.

From four to ten engineers pres-

(Concluded on next page)

Simple rear-dump construction pays off



Construction of the Tournapull Rear-Dump has been radically simplified from that of a conventional heavy-duty hauler. In place of a foundation frame and body sub-frame, Tournapull Rear-Dump hitches rear and front wheels through a horizontal yoke extending back from the kingpin and pivoted to the body itself just above and ahead of the rear wheels. Body is simpler, much stronger . . . has no frame and sub-frame to get out of line.

Look at the photo above . . . note the absence of springs, spring hangars, and tie rods. Low-pressure tires adequately absorb the shocks of rough haul-road travel and high-speed loading. Eliminated are spring maintenance, replacement time and cost of spring parts.

Front wheel drive and kingpin-type steering help simplify Tournapull construction, too. No longer must power be carried back to the rear through a drive-shaft. Bearing and lubricating problems of a long drive-shaft are eliminated. No longer is steering handled by small front wheels subject to misalignment. There are no tie rods, no hinged steering connections to become twisted or bent.

Nor do you have the troubles of hydraulic hoists or gravity dumping with these Rear-Dumps. Dump is by an electric winch that lifts the body up on twin cables. Operation is under complete control at all times, with positive power for dump and return controlled by an electric switch on the dash. There are no oil seals, no high-pressure lines and jacks to keep tight, no freezing up in cold weather as with hydraulics. There are no shock loads as in gravity dumping. You save on regular maintenance time because there is no hoist mechanism to check . . . only a few places to lubricate.

Let us show you how these savings can put money in *your* pocket. For proof, we'll be glad to show you performance figures from a job like yours, or, if you wish, give you names and addresses of owners of Tournapull Rear-Dumps, so you can check for yourself. Call soon.

Tournapull Rear-Dumps Come in Sizes to Fit Your Needs

"D"	"C"	"B"	"A"
9 tons	22 tons	35 tons	50 tons
138 hp	208 hp	293 hp	420 hp

Prime-movers also power interchangeable scrapers, bottom-dumps, flat-beds, and cranes.

Tournapull—Trademark Reg. U.S. Pat. Off. R-774-G-b

LeTourneau-Westinghouse Company
PEORIA, ILLINOIS
A Subsidiary of Westinghouse Air Brake Company

(Continued from preceding page)

ently engaged in form design at the South San Francisco office work under chief engineer Bob Kerr and assistant chief engineer Lew Wellman, head of the form department. They are all young engineering graduates who ranked close to the top in their classes. In their interviews, they were rated for judgment, previous experience, if any, emotional stability, and adaptability.

Training

Each young engineer gets about a year's experience in the headquarters office on quantity takeoff work. After a year, the men can swiftly and accurately figure the quantities of materials needed on the job—an important part of their future business responsibilities.

For about the next nine months of their training period, the men get experience on form layouts in the main office. Working under the supervision of older heads, they quickly pick up first-hand information on the importance of clearances for stripping forms; the importance of designing a form for re-use, weight, and ease of handling; safety; and availability of form materials.

The man's acid test comes when he goes out to a job for the first time to help supervise the installation of forms which he designed. Here he must work against his own schedule and with accurately identified forms. When the day arrives that field men learn to depend on him, the engineer has achieved the status he was hired to reach.

Salaries paid these young men are commensurate with those paid by industry and top-flight engineering firms, and are slightly higher than those paid by most public agencies for the same work.

The reaction of field men to the form department has been good. No one gave Atkinson's centralized system more help and encouragement than veteran John Morton, project manager at The Dalles. Like others in the field, he realizes the value of having work details planned well in advance.

The concrete department, which was almost forced into existence, has now more than justified itself, for management knows almost to the day when a job will be finished. While acting as a central clearing house for information regarding best methods to use on a job, the department has introduced proved economies into the field. It has standardized construction practices to a great extent so that important field personnel remain on familiar ground from job to job. And the excellent training which the young engineers are getting as they earn their first paychecks is making them into men who will eventually become officials of the Atkinson Co.

THE END

A recent survey of the smoking habits of drivers discloses the fact that a far larger portion of accident drivers than no-accident drivers are smokers.

NEW! The most advanced, best engineered trowel on the market!

STOW Roto-Trowel for faster floor finishing

DEAD-MAN CONTROL

STURDY STATIONARY GUARD RING

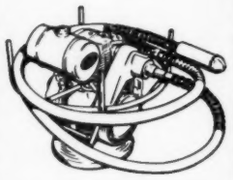
Model G-34 Gasoline
Also available as Electric model E-34

- Allows surface floating within one hour of removal of screed from job
- Roto-Trowel, with floating blades attached, drives air-pockets out — brings up moisture to produce an excellent surface
- With finishing trowels in place, adjusted for specific conditions of the job, Stow Roto-Trowel provides a smooth, level, even finish

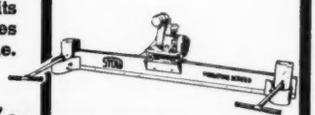
Stow Roto-Trowel is:

Ruggedly constructed to do an excellent job on any concrete slab. Pitch Control provides exact adjustment of trowel pitch while machine is in motion. Dead-Man Control stops trowel blades the instant the operator lets go of lever. Equipped with rugged 34" dia. Stationary Guard Ring, does not rotate, permits close-to-wall work. Quick change blades reverse for double life. 2½ H. P. engine.

G40-C Flexible Shaft Concrete Grinder — an efficient, lightweight tool built on a wide wheel base for stability, caster fitted for easy mobility.



AG, AGW Vibrators — heavy-duty vibrators especially recommended for compacting thick floor slabs, walls, piles and foundations.

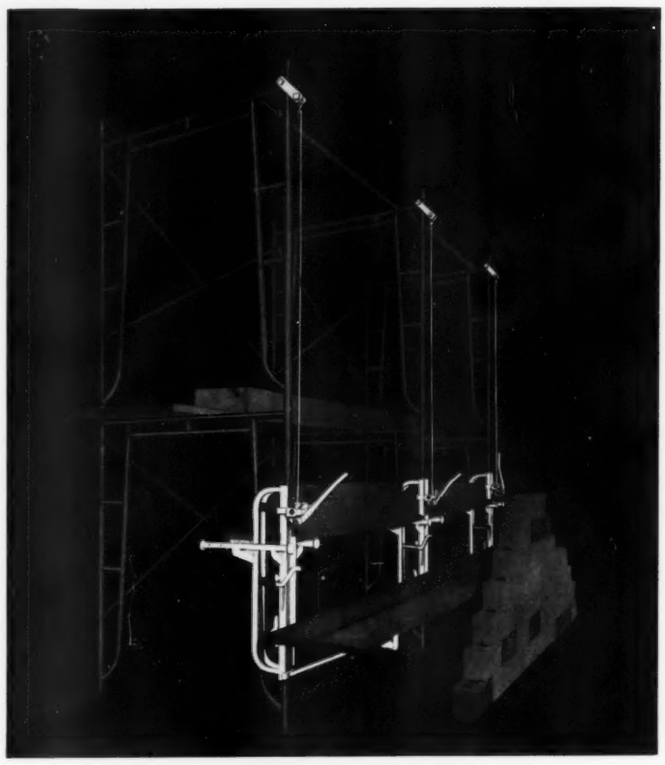


Stow Vibrating Screeds — strike off a smooth surface that is true to grade, at the same time thoroughly vibrating the concrete.

Write today for Bulletin 555

STOW MANUFACTURING CO.
40 Shear St., Binghamton, New York

Increase efficiency with this
Revolutionary Mason Scaffold



...the SAFWAY
MOBIL-BRACKET

Lifts Platform to Follow Work; Can be Used with any Safway Scaffolding at any Height

NOW, for the first time, masons can set their own best working height! The Safway MOBIL-BRACKET "climbs" the scaffold as walls rise. It gives you all Safway Scaffolding advantages plus adjustable material and loading platforms.

IT'S SAFE! IT'S FAST! IT SAVES!

And you can *buy* or *rent* MOBIL-BRACKETS from the Safway distributor in your area!

LET US DEMONSTRATE OR WRITE FOR FREE LITERATURE!

SAFWAY STEEL PRODUCTS INCORPORATED
6240 West State St.
MILWAUKEE 13, WIS.
Manufacturers of Tubular Steel Scaffolding and Equipment

RENTED and SOLD by distributors everywhere

Case history

Highway official finds dictating unit in car aid to job efficiency

A district maintenance engineer for the Wyoming State Highway Department has taken a lot of the guesswork out of his job—at the same time freeing himself from his desk for more field work—by installing a dictating machine in his state car.

John H. Myers, District 2 maintenance engineer with offices at Casper, had a Gray Audograph installed in his automobile, along with an American Telephone & Radio Corp. inverter which converts 6-volt battery current to 110 volts AC. The installation permits him to record his observations and other information as he drives along the roads in his district.

By merely picking up the microphone and flipping a switch, Myers can record and accurately describe needed work without resorting to note-taking. Each Saturday morning he goes through all dictated material before preparing work instructions for his foreman for the following week. Details of each observation he had made during the week are fresh, and there is no longer the need to rely on memory or decipher hastily-scribbled notes.

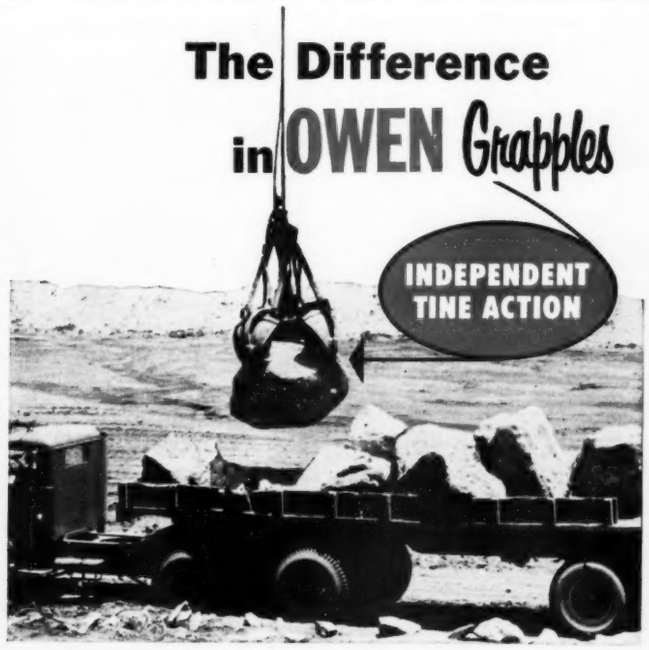
In one particularly interesting application, Myers uses the machine in determining the locations for maximum safe speed limit signs. He drives the curve himself, records the speed and list (through a standard airplane bank-and-curve indicator) of his car, checks the location by his speedometer, and dictates the information into the machine. Stopping the car, measuring, and other time-consuming activity—not to mention possible inaccuracy—is thus eliminated.

John H. Myers, Wyoming highway District 2 maintenance engineer, dictates a loose-end detail into his Gray Audograph.

In three years' constant use of the Audograph, Myers has had no maintenance expense for tubes, vibrators, drive belts, or microphone. Every month he cleans the machine with a high-pressure air hose, then applies a few drops of oil.

Impressed with the application Myers has made of the Audograph, the state department traffic engineer has had a similar machine installed in his car.

The Difference in OWEN Grapples

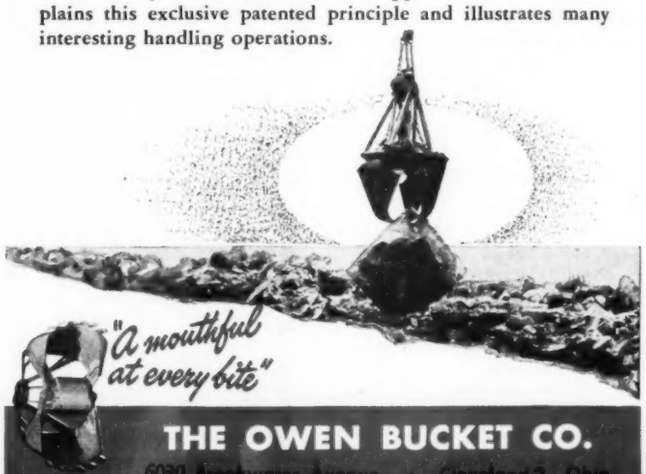


How can Owen Grapples *grasp* odd shaped stones and *hold* them securely under seemingly impossible conditions?

The answer is easy and logical...Owen is the *only grapple in which each tine operates independently.*

When power is applied all tines move toward the center. The one first meeting strong resistance grips and the others continue to move until each meets similar opposition. The result is tremendous gripping power and ability to grasp and hold objects regardless of their unusual shapes.

Send today for the Owen Rock Grapple Bulletin which explains this exclusive patented principle and illustrates many interesting handling operations.



THE OWEN BUCKET CO.

6030 Breakwater Avenue • Cleveland 2, Ohio

Branches: New York Philadelphia Chicago Berkeley Seattle Fort Lauderdale Fla.

Sealing Compounds at Work!

PRESSTITE'S *cold applied 3-step sewer joint sealing system*

Prevents Overloading Sewage Disposal Plant

Extensive ground water infiltration can overload planned capacity of the disposal plant, resulting in serious trouble and expense. To prevent this, engineers specified Presstite's 3-step system to seal the recent 17-mile Decatur, Ill., sewer project.

Developed through extensive research, Presstite's economical proven system insures tighter, more dependable joints with three simple steps:

1. Presstite PRIMER... painted on bell and spigot ends before laying pipe, provides a better bond.

2. Plus Presstite ROPAX®... non-porous packing provides *additional* joint sealing material, forms solid seal impervious to passage of water.

3. Plus Presstite KALKTITE®... cold mixed, cold applied asphaltic cement completes sealing. Sets up under the most adverse conditions, forms dense, tough, flexible seal that *keeps water out!*

It's as simple as 1-2-3! You get tighter joints plus saving time and money with Presstite's 3-step system.

PRESSTITE SEALING COMPOUNDS

WRITE TODAY for 20 page detailed catalog, samples and prices.

PRESSTITE ENGINEERING COMPANY

3788 Chouteau Avenue St. Louis 10, Mo.

Tubular alloy wires offer high-speed hard-facing

■ A new line of tubular fabricated alloy wires designed for open-arc application through standard semiautomatic welders has been announced by Stoody Co., Whittier, Calif. Deposited at a rate of 7 to 15 pounds of hard metal an hour, this material is used in conjunction with a method that makes possible a welding speed two or three times that of the manual process. The new process requires no flux and offers the versatility of manual welding with the control of full automatic welding.

Three materials are now in production at the Stoody plant: a 50 per cent high-chromium hard-facing alloy, a 20 per cent alloy for hard-facing, and a Hadfield nickel manganese for build-up of manganese steel parts. The 7/64-inch wires now available are identical in composition to Stoody tubular electrodes and wires in common use throughout the country.

An important advantage offered by the new welding material is savings in labor that result from an exceptionally high deposition rate. Furthermore, normal 10 per cent loss for stub ends, an important item with manual electrodes, is eliminated. Since they are bare, these wires are approximately 90 per cent efficient, and there is no slag-removal problem.

In operation, semiautomatic welding using the Stoody tubular wires is much like manual welding except that wire feed is continuous and both feed and arc control are automatic. Application by open arc gives complete visibility at all times. Deposits are reported to bond well to the base metal with very little penetration or dilution. A power source of not less than 400 amps is recommended.

Almost any standard semiautomatic welder, with minor adaptations, can be used for the process. A welding nozzle, special grooved feed rolls, and supplementary wire guides are all that are required to make the conversion in most cases. Such parts as are necessary are included in a kit available from Stoody distributors.

For further information write to the company, or use the Request Card at page 18. Circle No. 149.

New Stoody tubular alloy wires for use on semiautomatic welders provide a fast versatile hard-facing method.

Improvements described for new crawler tractor

■ A booklet on the new Caterpillar D8 tractor has been released.

New advances in design mentioned in the booklet are a more powerful engine, controls, live shaft drive, welded one-piece steering clutch case, 7-roller track frame, water-quenched track shoes, hydraulic booster steering, starting engine, starting from the operator's seat, larger fuel tank, and new attachments.

Complete specifications on both the torque-converter model and the direct-drive model are included.

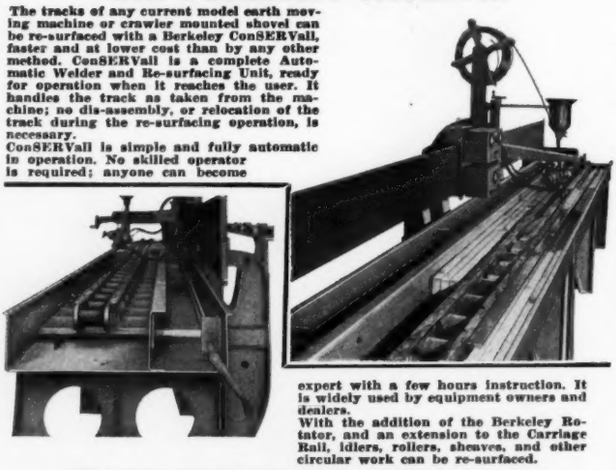
To obtain Form 31496 write to Caterpillar Tractor Co., Peoria, Ill., or use the Request Card at page 18. Circle No. 9.

Division sales manager appointed by Twin Disc

Jack N. Yetter has been made sales manager of the general products division of Twin Disc Clutch Co., Racine, Wis., filling the post left vacant by the retirement of E. C. Billings.

TRACK RE-SURFACING, fast and at low cost with a BERKELEY ConSERVall

The tracks of any current model earth moving machine or crawler mounted shovel can be re-surfaced with a Berkeley ConSERVall, faster and at lower cost than by any other method. ConSERVall is a complete Automatic Welder and Re-surfacing Unit, ready for operation when it reaches the user. It handles the track as taken from the machine; no dis-assembly, or relocation of the track during the re-surfacing operation, is necessary.
ConSERVall is simple and fully automatic in operation. No skilled operator is required; anyone can become expert with a few hours instruction. It is widely used by equipment owners and dealers.
With the addition of the Berkeley Rotator, and an extension to the Carriage Rail, idlers, rollers, sheaves, and other circular work can be re-surfaced.



Write for illustrated circulars, complete specifications, and prices.

PENN TOOL & MACHINE CO.
Danville, Illinois

Builders of production welding machines, jigs and fixtures
An Affiliate of Berkeley Equipment Company

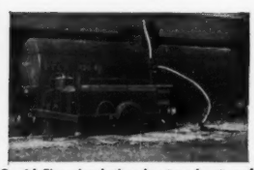
GRACE

3 sweeper models, axle, engine or tractor powered.

Sheepsfoot Rollers 250 to 600 psi.

GRACE Asphalt and Compaction Equipment

Rapidspray Maintenance Distributors. Also heaters for production melting of barreled asphalt.

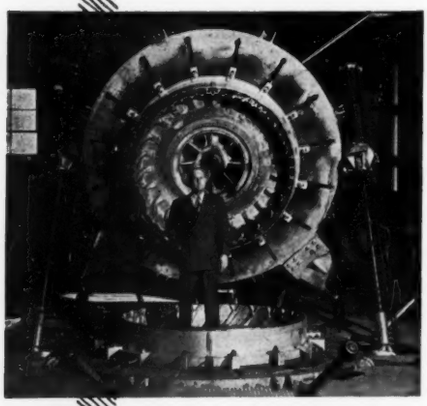


Rapid Fire circulating heaters heat and unload large tanks of asphalt.

Chip spreaders 8' to 12' width. Also asphaltic concrete spreaders.

Pneumatic rollers 7 to 50 tons.

W. E. GRACE MFG. CO.
6003 South Lamar St., Dallas, Texas



Only plant in the South equipped to retread tires up through 2700-33. Retreads like new tires at 50% savings.

THE GENERAL TIRE WITH NEW NYGEN CORD

General's new NYGEN CORD tire has built-in strength. Pound for pound, NYGEN CORD is stronger than steel cables!

Specialists in

BIG TIRE SERVICE
WITHIN 1200 MILES OF CORPUS CHRISTI

You save money when you turn your BIG TIRE troubles over to a BIG TIRE specialist. Specially designed field trucks with power tools, giant hoists and built-in light plants will keep your heavy equipment rolling. Save costly "downtime" by depending on Dickenson to get the job done right and quickly the first time.

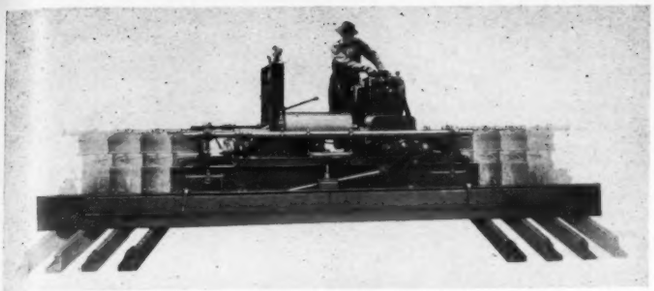
CHECK THESE EXTRA FREE ON THE JOB SERVICES

- Complete field service with special equipment
- Fast pickup and delivery within 1200 mile radius
- Periodic inspection on-the-job
- Mount tires
- Rotate tires when necessary
- Furnish "loaners" while doing your retreading.

Dickenson dependable service is backed by 25 years experience. Let us show you how our plan can help you at no obligation to you.

WRITE • WIRE • CALL TODAY—COLLECT

DICKENSON GENERAL TIRE SERVICE
323 N. Water Street • Phone 4-7773 • Corpus Christi, Texas



This new Flex-Plane finisher widens through controls on the operator's stand to accommodate changes in paving width.

Finishing machine widens by fingertip control

■ A new Flex-Plane finishing machine widens by fingertip controls at the operator's stand. The machine makes it possible to finish wide or variable-width slabs without a special form setup and a separate pouring operation. Forms can be set to follow the variations in the road's width.

The self-widening finisher is expected to save considerable time in finishing highway interchanges, intersections, passing areas, and other points at which the pavement width varies. It will also give the finished roadway greater uniformity while reducing hand labor.

The adjustable Flex-Plane is designed on a new principle in which the entire frame—not just the wheels—widens to accommodate variations in slab width. A specially-designed triple-lap frame gives the machine rigidity even when it is completely expanded. The new Flex-Plane can also be used as a straight-line finisher.

For further information write to Flexible Road Joint Machinery Co., Warren, Ohio, or use the Request Card at page 18. Circle No. 147.

Booklet tells advantages of shoring technique using steel scaffolding

■ A new technique said to offer substantial savings in the over-all cost of shoring concrete forms is described and illustrated in a brochure released by Universal Mfg. Corp., Zelienople 25, Pa.

Based on contractor's experiences in shoring buildings, highway bridges, overpasses, and other reinforced-concrete structures, the brochure lists the advantages of shoring forms with Universal Ezebilt scaffolds. Among these are savings in material, faster forming operations, and the elimination of unnecessary tearing down and re-erecting of shoring and forms.

To obtain this literature write to the company or use the Request Card at page 18. Circle No. 165.

Tractor-mounted backhoe

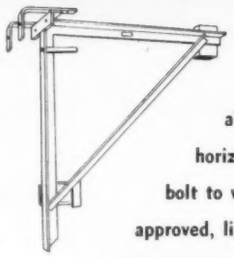
■ A new booklet describes the Sherman Power Digger, a tractor-mounted backhoe.

The booklet provides details on the wide range of uses for the Sherman machine and features actual on-the-job pictures, Accessories, work range, and specifications are also included.

To obtain this literature write to Sherman Products, Inc., 3200 W. 14 Mile, Royal Oak, Mich., or use the card at page 18. Circle No. 166.

SUPERIOR WALER JACKS

A Must ON CONCRETE JOBS



Fast . . . safe . . . no sway! Low cost, ruggedly built Waler Jack provides solid scaffolding on bridges, dams, abutments—all concrete construction jobs using horizontal walers. Use on 2 x 4 or 2 x 6 waler—or bolt to wall. Can be used on bottom waler. State approved, light weight—a real moneymaker!

FREE TRIAL ON YOUR JOB!

Write for Descriptive Literature To Nearest Address

Dealer Inquiries Invited

SUPERIOR SCAFFOLD COMPANY
Dept. CE
5624 Bankfield Ave., Culver City, California

NATIONAL PLASTER BLOCK CO.
Dept. CE
2236 N. 27th St., Philadelphia 32, Pa.

5 years of job-proved savings in portable air-power costs

600 cfm GYRO-FLO portable compressor serving two Wagon Drills on a highway improvement project.

600 CFM GYRO-FLO rotary compressors

Five years ago, Ingersoll-Rand pioneered a new revolutionary portable compressor with no pistons, rings, rods or valves—the 600 cfm GYRO-FLO. Its advantages over the reciprocating compressor were so great that it looked almost too good to be true. Hence there was much speculation as to how it would stand up under actual on-the-job conditions.

Today, there can be no room for doubt. The 600 cfm GYRO-FLO has won its service stripes in the world's toughest proving ground—the heavy construction field. Five years of performance on all kinds of jobs have proved its outstanding economy, dependability and remarkable freedom from maintenance. Smaller—lighter—smoother running—air temperatures under 200°F—low oil consumption—closer regulation at all loads from 0 to 100% capacity. These advantages are a matter of record.

Available in 125, 210, 315 and 600 cfm sizes, the GYRO-FLO, with five years of time proven experience, stands out as the finest portable air power plant obtainable. Ask your I-R representative for the complete, cost-saving details.

Ingersoll-Rand
2-227 11 Broadway, New York 4, N. Y.

IR CONTRACTORS' COMBINATION

COMPRESSORS • ROCK DRILLS • AIR TOOLS • CARSET JACKBITS • PUMPS

Pouring concrete for a sidewall with crane and bucket is a standard cost-cutting method on big construction jobs. In this case, the McGraw estimating team also recommended rented metal forms to reduce costs.

MANAGEMENT

Estimating is for experts since

Profits hinge on variables in bidding

by ROBERT F. KANE, F. H. McGraw & Co., contractors, Hartford, Conn.

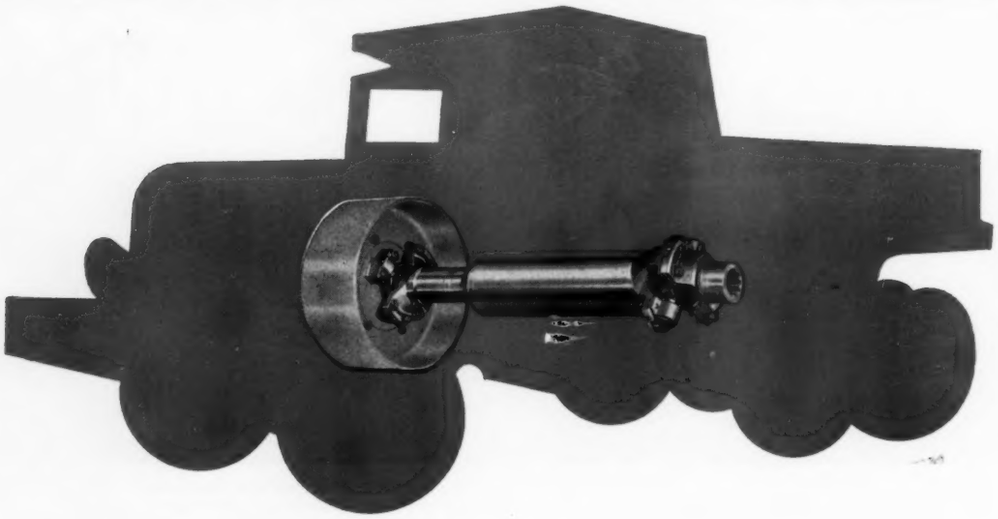
Lump the brainwork of the coach, quarterback, and captain of a championship football team together and you have the function of a contracting firm's estimating department.

Now it is generally agreed that behind every construction project—whether a bridge, a building, or a bungalow—there is a story of inventiveness, ingenious handicraft, and old-fashioned hard work. But what is not always realized is that nearly every job represents a major achievement for its constructor long before ground is even broken. That achievement consists in winning the right to do the job by calculating its cost (plus a profit) at a price lower than that of competing contractors.

The work of the estimating department begins from two to six weeks before the letting of bids. First, the prospective client sends the estimators specifications, drawings, and letters describing the scope of the work to be done. The estimators must know quantities and prices of all materials to be used, number of hours of labor required, going labor price, and amount of overhead, taxes, and insurance. Add to this a legitimate profit, and the total will be the bid.

Simple as that—or is it?

RUGGED



Because MECHANICS Roller Bearing UNIVERSAL JOINTS drive through KEYS—instead of bolts—they stand up under punishment that shears off other types of fasteners. They are designed with less parts and connections for easy assembly and servicing — smooth running balance — maximum strength with less weight — and long, trouble-free, safe operation. Rugged stamina is just one of the advantages you get when you specify MECHANICS Roller Bearing UNIVERSAL JOINTS. Let MECHANICS engineers help you design this and other competitive sales features into your product's transmission train.

MECHANICS UNIVERSAL JOINT DIVISION
Borg-Warner • 2032 Harrison Ave., Rockford, Ill.

MECHANICS
Roller Bearing B-W
UNIVERSAL JOINTS
For Cars • Trucks • Tractors • Farm Implements • Road Machinery • Aircraft • Tanks • Busses and Industrial Equipment

BUY
these cost-reducing forms for concrete:

1. EFCO "Lifetime" Steel Forms
BUY these forms for your: (a) Minimum form requirements. (b) Larger form requirements where reuse of the form equipment and simplicity of the form work seem to make purchase more practical.

2. SPECIAL ECONOMY Forms
These are designed and manufactured to your specifications and are supplied with or without supervisory service for your special form requirements.

RENT

3. ECONOMY Steel Forms
RENT these forms for your: (a) Larger unusual form requirements. (b) More difficult form requirements. These forms are supplied with supervisory service.

For details and estimates, call or write:

ECONOMY FORMS CORPORATION

HOME OFFICE: DES MOINES, IOWA
DISTRICT SALES OFFICES: St. Louis, Mo. • Kansas City, Mo. • Lincoln, Nebr. • Minneapolis, Minn. • Ft. Wayne, Ind. • Cincinnati, Ohio • Cleveland, Ohio Metuchen, N. J. • Springfield, Mass. • Rochester, N. Y. Washington, D. C. • Decatur, Ga. • Dallas, Texas Los Angeles, Calif. • Oakland, Calif. • Denver, Colo.

The prefabricated metal foundation forms, handled by the Manitowoc 2000 Speedcrane on this housing-development project at Hartford, Conn., were suggested by F. H. McGraw & Co.'s estimating department. Multiple reuse of the units cut forming costs.
C&E Staff Photo

Workmen riding the ends of huge steel trusses prepare to make a pin connection on a large warehouse project in Montreal. Here McGraw's estimators sublet the iron work because of a local price advantage.

Estimates must be made months—sometimes years—before a construction project is finished. In this interim, much can happen: material prices may fluctuate, wage rates may change as a result of renewed labor contracts, labor-saving devices may be developed, and bad weather may cause considerable loss of man-hours. Any one of a thousand factors can alter the accuracy of the estimate—for better or worse—unless such changes are anticipated.

This doesn't mean that estimators must be clairvoyant, nor does it mean that they must be experts in scientific and technical calculations, and in projecting price curves. Such methods will probably produce a bid not too far off, but not necessarily—and this is why one out of every five contractors (according to national statistics) goes broke every year. It is one thing to turn in the low bid, but quite another to make a legiti-

(Continued on next page)

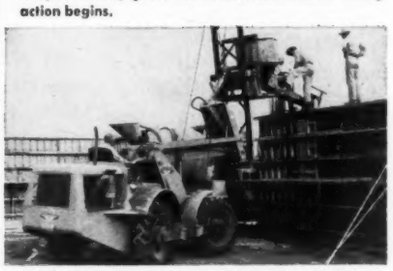
"Outperforms Anything on Tracks or Wheels!"

MODEL LD-8
SCOOPMOBILE
1⅝ CUBIC YARD

Long boom, 9-ft. discharge height aid accurate spotting of load. Operator works with outstanding visibility away from all moving parts.

Twist-turn flexibility permits scooping or loading in a turn. Maneuvering time saved contributes to higher production. (Enclosed cab optional.)

Bucket closing is hydraulically controlled independently of boom, gives full bucket load before lifting action begins.



Quick-change attachments give bonus materials handling uses. Above, pouring concrete with swivel hopper and special high lift track attachment.

Four-wheel planetary drive—hydraulic power steering—torque converter with full power reversing transmission—road speeds to 25 m.p.h.—twist-turn flexibility with exclusive Pow-R-Flex coupling of two separate power axle elements. Individual axles oscillate up to 13". Full, positive traction on all four wheels at any degree of twist, turn or oscillation.

Before you buy any front-end loader, let your Scoopmobile dealer show you by actual performance how the LD-8 can do a better, faster loading job for you — why owners say this big scoop "outperforms anything in its class on tracks or wheels!"

COMPLETE RANGE OF CAPACITIES { LD-5, 1 cu. yd.—LD-12, 2½ cu. yd. / LD-15, 3 cu. yd.—LD-20, 4 cu. yd.

WRITE FOR LITERATURE

Please send literature, name of nearest dealer:

Name_____

Company_____

Address_____

City_____ State_____

MIXERMOBILE DISTRIBUTORS
8027 N. E. Killingsworth • Portland 20, Oregon

Four-wheel Drive Scoopmobiles • Three-wheel Scoopmobiles
Duo-Way Lifts and Scoops
Mixermobiles • Towermobiles • Stationery Mixers

FOUNDATION CONSTRUCTION
•
CAISSONS
SHAFTS
DRILLED AND UNDERREAMED
PIERS
•
SPECIAL DRILLING PROBLEMS
•
Wire or phone for a quotation on your next foundation job — ANYWHERE IN THE WORLD

McKINNEY
DRILLING COMPANY
NACOGDOCHES, TEXAS
Phones: 1195 - 1053 • P. O. Box 190

Powered concrete buggies, a post-war innovation in construction machinery, were first used by the McGraw company on a Wisconsin warehouse project in 1949. Estimators found the buggies speeded concrete pours and cut labor costs substantially.

(Continued from preceding page)

mate profit in the bargain.

Human variables

Estimators must also take into account the human factor. One job superintendent may know how to cut corners; another may not. Estimators must know the capabilities, resourcefulness, and shortcomings of the men who transform into steel and concrete the project the estimating department has built with figures. The human factor goes even further than that. The character and temperament of a superintendent and his ability to get along with a client must be taken into consideration.

Once a job is procured, the estimators follow it through to completion both as consultants and to keep abreast of changing conditions. The estimating follow-up consists in drawing up a code of accounts, making an official assignment of various amounts of money to specific parts of the job, and then keeping abreast of job costs within these designations. Only a few seasoned engineers—college-trained or field-trained—can shoulder such responsibility.

Jack Jones and Howard Harmon, top estimators for F. H. McGraw & Co., speak as one when they say that an estimator must have lots of field experience, an analytical mind, working knowledge of modern methods, materials, and equipment, and the courage of his convictions. Both of these men are well qualified to speak on the subject. Jones has devoted nearly 40 years to construction, and is considered one of the best mechanical construction men in the field. Harmon, an engineer, has served on several of the nation's largest construction projects, as well as on many small specialized jobs.

Other regular members of the department are Ted Breitenkamp, Bob Rolwing, Bill Reitz, and Herbert Wiggins.

The McGraw estimating department is broken down into two divisions: mechanical and general construction. On projects in which both mechanical and general construction are involved, the efforts of the two divisions are integrated. For speciality purposes, however, the mechanical division usually handles electrical, sheet-metal, mechanical-erection, and piping figures; the general construction division deals with site clearance, excavation, foundation work, concrete, steel erection, masonry, and other aspects of heavy structural work.

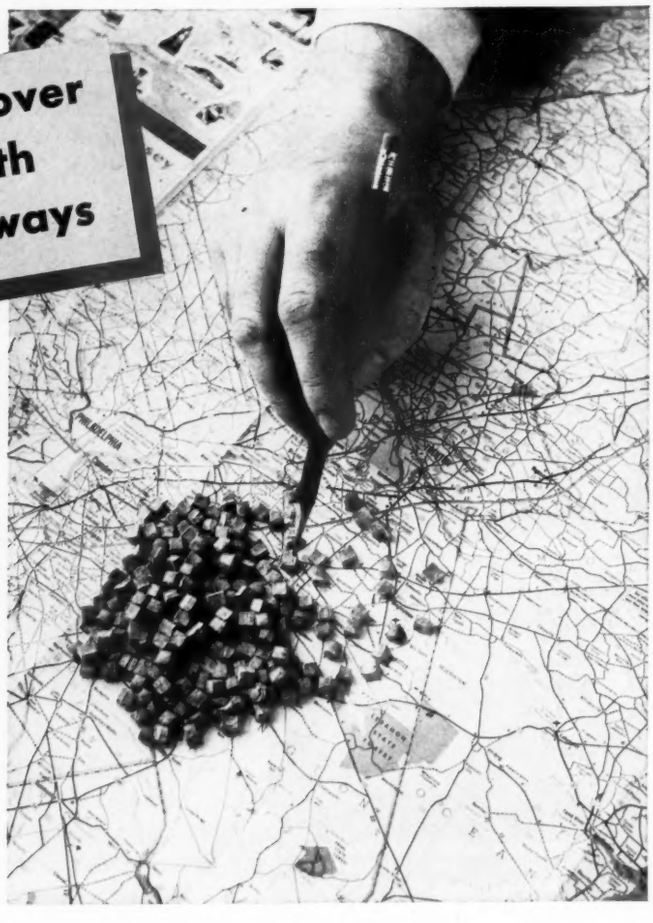
The company maintains two offices for estimating: one in Hartford, Conn., at the firm's home office; the other in Chicago. Geographical location of a proposed project usually determines which office will figure a job. Normally, the estimating department numbers about ten men—all specialists in various phases of construction. On special projects the department enlists help from the field.

Estimating procedures within the McGraw company are pretty much standard—up to a point. Initial steps include a review of soil and site conditions, a review of the contract, and close study of plans and specifications with sharp focus on building deviations and innovations.

Paring the bid

Upon completion of take-offs (made from building, heating, electrical, and other drawings) and basic bid figures, a conference of the estimators is held. Here all aspects of the basic bid are discussed, and overhead and profit

Now we can cover America with RUBBER highways



New Surfa-SEALZ® PELLETS make possible rubber addition right on your jobs!

NOW every asphalt plant in the country is a potential rubber-bituminous mix plant, thanks to Surfa-SEALZ Pellets of concentrated synthetic rubber!

Tossed into a mixing mill, Surfa-SEALZ Pellets break down in 60 seconds, spreading rubber evenly through the mix. In their dry form they are easy to handle...easy to weigh... easy to store. Once blended, they do not separate.

Rubber-bituminous concrete made with Surfa-SEALZ Pellets needs no special equipment to mix or to lay. And the rubber adds less than $2.00 to the cost of a ton...surely a low premium for the increased adhesion, cohesion, crack resistance, skid resistance and longer life it promises in surface courses!

Write today for literature and free test samples.

Naugatuck Chemical

Division of United States Rubber Company

Naugatuck, Connecticut

BRANCHES: Akron • Boston • Charlotte • Chicago • Los Angeles • Memphis • New York • Philadelphia • IN CANADA: Naugatuck Chemicals, Elmira, Ontario

Rubber Chemicals • Synthetic Rubber • Plastics • Agricultural Chemicals • Reclaimed Rubber • Latices • Cable Address: Rubexport, N.Y.

A McGraw estimating team takes off for an on-site survey preparatory to figuring a large industrial construction project. Left to right are: Mario de la Torre, civil engineer; M. E. McDonough, mechanical engineer; and Howard Belsor, office administrator.

are figured in. With the basic cost of the job finalized, McGraw engineers then superimpose certain cost-cutting construction techniques and short-cuts in methods of operation. This is done in an attempt to lower the basic bid figure.

These superimpositions might take the form of lower field office overhead through use of company trailers, utilization of equipment on nearby jobs, a unique concrete-pouring technique, a new type of jack-form, or use of electronic beams to eliminate the expense of a night watchman. Constantly in search of new cost-cutting devices, estimators are avid readers of construction and engineering trade magazines and manufacturers' bulletins.

Together, the McGraw estimators act as a smooth-functioning team in the game of contracting competition. In bidding, they cannot afford to err. Too high a bid will not procure work. And too low a bid will not produce a profit. THE END

Folder describes line of concrete additives

■ A folder describing several additives for the production of improved concrete is available from the Gregg Co., Inc., P. O. Box 149, Riverton, N. J. The literature lists Drion air-entraining agent, which produces a more uniform concrete while improving its workability and reducing its tendency to segregate.

The line also includes a complete line of concrete-curing compounds, which are formulated to meet most state and federal specifications. Sprayed on freshly poured concrete, these compounds form a homogeneous film that prevents water escaping from the mixture by sealing the surface.

Drion concrete hardeners that increase the resistance to wear and chipping from heavy traffic are also described.

The Gregg Co. also offers a form lacquer that increases form life and improves the appearance of the concrete slab.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 53.

Asphalt patching plant prepares mix as needed

■ A small patching plant that prepares hot mix on the job as needed is illustrated in a folder from Cartwright Industries, P. O. Box 3251, South Highland Station, Birmingham, Ala. Mixing any quantity from a half-shovel full to a wheelbarrow load, the Cartwright Pavette automatically proportions mixes as desired. The machine eliminates the waste and trouble of left-over or insufficient mix.

Furnished with a 200-gallon tank with heating system, pump, and valves, the Pavette handles heavy bitumen. A specially designed nozzle sprays asphalt cement, cutbacks, road oils, emulsions, or tars at about 35 pounds per minute.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 99.

Details on new cab for construction machines

■ A catalog describes a new Crenlo cab that is of the size and shape commonly used on truck-mounted cranes, ready-mix trucks, special construction machines, and carriers of long metal objects or lumber.

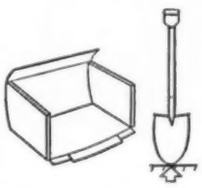
Construction details, specifications, and a complete list of optional accessories are included in the literature.

To obtain this catalog write to Crenlo, Inc., Rochester, Minn., or use the Request Card at page 18. Circle No. 168.

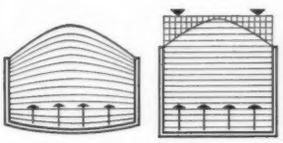
Outstanding, New Allis-Chalmers Earth-Moving Team: Model 315 scraper, with 20-yd heaped capacity, pulled by an HD-16 Tractor (150 net engine hp with torque converter drive, 131 belt hp with standard transmission drive).

Look At The Dirt-Moving Advantages of Allis-Chalmers Scrapers

Digs in Fast. Curved and offset cutting edge on Allis-Chalmers scrapers concentrates initial digging effort at center for faster penetration — as with a round-end, curved-bottom spade.



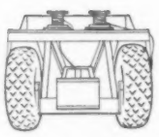
Loads with Less Resistance. Low, wide bowl reduces loading time, requires less power.



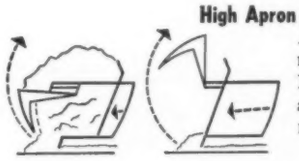
Heaps Loads with a Minimum of Spillage. Combination of deep center cut and correct angling of cutting edge loads the scraper with minimum spillage. "Boiling" action fills voids, produces automatically well-heaped loads.

Hugs the Ground for Stability. The wide, low bowl keeps scraper center of gravity low . . . wide wheel tread adds stability for working on slopes, grades, or rough terrain.

Hauls, Maneuvers Easily. Big, low-pressure tires provide maximum flotation. A short wheel base permits scraper to turn within its own length.

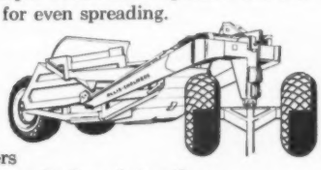


High Apron Lift Prevents Jamming. Apron lift is high — as much as 102 in. in the Model 315. Prevents any possibility of material jamming.



Dumps with Positive Ejection, Spreads Evenly. Ejector forces load forward, wipes bowl clean. Operator can control rate of discharge for even spreading.

Ground Clearance. Front-running gear has ample clearance. High carrying position of bowl enables Allis-Chalmers scrapers to clear ruts, windrows and other obstructions.



Model 315	Model 108	Model 106	Model 44*	Model 24*
15 yd struck 20 yd heaped	8.4 yd struck 11 yd heaped	6.1 yd struck 7.5 yd heaped	4 yd struck 4.7 yd heaped	2 yd struck 2 yd heaped

*Hydraulically controlled

COMPARE Allis-Chalmers scrapers with others, feature by feature, dollar for dollar, and you'll see why they are your best buy in every way.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

Powered by a 262-hp diesel engine, the new International 75 Payscraper carries up to 18.5 cubic yards heaped at speeds up to 24 mph. ►

New 18.5-cubic-yard motor scraper features easier operation and big boost in engine power

■ The largest rubber-tire earthmover in the International line is now the new 75 Payscraper, a big highly mobile motor scraper that can scoop up an 18.5-cubic-yard heaped load and haul at speeds up to 24 mph. Powered by a 262-hp diesel engine, the 52,660-pound Payscraper has 31½ per cent more power than the previously largest International scraper.

In order to accommodate the increase in power, the machine's entire power train has been strengthened. In addition, increased gear reduction at the final drive puts less torque on the transmission, and reduces shock loads.

To make the Payscraper an easy-to-run machine, International has incorporated a number of features aimed at operator comfort in the design of the machine. More hydraulic operating pressure has been provided for the unit's exclusive Hydro-Steer system to give better steering control. This mechanism uses a pump that supplies oil under constant metered pressure to two opposed, double-acting, hydraulic steering cylinders. Hydro-Steer is designed to provide safe positive steering, to eliminate jack-knifing.

Also increasing the Payscraper's ease of operation is the new air-assisted clutch release. With this device, the clutch responds to a touch of the foot on the pedal, and there is more positive clutch engagement. A new disk-type cable-control unit makes the controls easier to manipulate and provides better control of the apron and bowl with less effort.

The machine now affords the operator unobstructed visibility. Controls are accessible and compactly arranged. The bucket-type foam-rubber seat has now been made adjustable.

The unit's four-wheel brakes are heavy-duty two-shoe air brakes synchronized on both the tractor wheels and the wheels of the scraper. Auxiliary hand-operated air control provides individual braking of the drive wheels for short turns.

The location and pitch of the cutting edge set up a boiling action that fills the entire area of the bowl and front apron within a short digging distance. In hard material, the entire weight of the scraper bowl rests on the cutting edge to give added penetrating force.

The floor of the scraper is tilted to achieve faster dumping. Hinged back of the cutting blade, the tilting floor rolls the load out of the bowl and cleans the stationary bowl sides.

Maintenance costs and downtime are cut by the accessibility of parts. For example, the axle and drive-wheel gears can be serviced quickly without tearing down the entire wheel assembly.

The scraper tractor has five forward and one reverse speed ranging from 2.73 to 23.75 mph.

For further information write to International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 151.

A white handkerchief tied to a car's left-hand door is now a recognized distress signal on the Garden State Parkway in New Jersey.

TURNING A SWAMP INTO A BEACH

Naylor pipe is the perfect vehicle whenever a construction job calls for moving sand, gravel and water. Though light in weight, this distinctive lockseamed, spiralwelded pipe has the extra strength, leaktightness and safety that make it outstanding in dredging service. It's easy to handle, install and knock down—especially when used with Naylor one-piece Wedge-Lock couplings. For full details on Naylor pipe, fittings and couplings, write for Bulletin No. 507.

NAYLOR PIPE

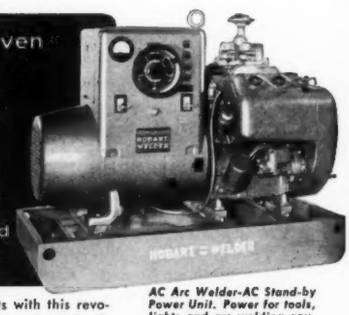
NAYLOR PIPE COMPANY

1270 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 350 Madison Avenue, New York 17, New York

Air-Cooled Engine Driven Combination **Arc Welder** and **Power Plant**

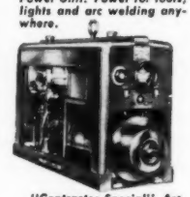
Power for tools, lights and arc welding ANYWHERE!



AC Arc Welder-AC Stand-by Power Unit. Power for tools, lights and arc welding anywhere.

Speed up your work and cut welding costs with this revolutionary new type of Hobart combination unit. Hobart's ingenious generator design lets a single generator and air-cooled gas engine provide power—either for welding or 110/220-volt power, all at the press of a button. Surprisingly compact and lightweight for easy moving. Can be mounted on truck or trailer—ready on a moment's notice.

And don't forget, Hobart has a type and size gas drive arc welder for every construction job—large or small. "Contractor Special" is a full capacity 250-ampere DC welder, yet compact and lightweight for easy moving from job to job. For extra heavy duty welding Hobart offers DC Gas Drive Welders ranging up to 600-ampere capacity.



"Contractor Special" Arc Welder.

HOBART TROY OHIO WELDERS

Gas Drive DC Arc Welder.

Tear off and MAIL TODAY!

● HOBART BROTHERS CO., Box 865, Troy, Ohio, U. S. A. Telephone 21223

Without obligation, please send information on items checked.

☐ AC Arc Welder-AC Power Unit ☐ "Contractor Special"
☐ DC Gas Drive Welders ☐ Electrode samples for_____

NAME_____POSITION_____

FIRM_____

ADDRESS_____

Maintaining constant communication with the shore office, warehouse, and other rigs via an RCA radio-telephone, the Paul F. Jahncke is able to continue dredging operations uninterruptedly on this navigation channel project near New Orleans, La.
C&E Staff Photos

Case history

Radio-telephone permits uninterrupted dredging

A big 22-inch hydraulic dredge digging a navigation channel in Lake Pontchartrain near New Orleans, La., is able to work around the clock, seven days a week, because of a radio-telephone link with the office and warehouse on shore.

Jahncke Service, Inc., New Orleans dredging contractor, has an RCA radio-telephone installed on its rig, the Paul F. Jahncke, to facilitate communication with other points. Repair parts, tools, supplies, food for the crew, and other items may be ordered simply by calling the office, warehouse, or another floating rig. Weather reports are received at regular intervals, storm warnings reach the dredge by way of the system, instructions or changes in plans may be dispatched to and from the rig, and a tug may be summoned for a tow within minutes.

The dredge-to-shore communication system is making for greatly increased efficiency on the dredging project, which is preparing an access waterway to a contractor's yard where prestressed concrete piles will be cast for a $30 million causeway across Lake Pontchartrain.

The RCA system not only permits dredging to continue without interruption, but also cuts down on downtime by permitting quick emergency repairs.

P. E. Hansen, field engineer for Jahncke Service, Inc., New Orleans, uses the RCA radio-telephone to communicate with the company's shore headquarters from his office on the dredge Paul F. Jahncke.

Le Roi department manager

Glenn W. Graf, with the sales promotion department of Le Roi Division of Westinghouse Air Brake Co., Milwaukee, Wis., for two years, has been named manager of the department. He was with Bucyrus-Erie Co. for two years before joining the Le Roi Division, manufacturer of internal combustion engines, Le Roi compressors, and Westinghouse stationary air compressors.

Fuel-injection repairs by mail order service lower diesel costs

■ The cost of repairing or replacing fuel-injection equipment is often a substantial portion of the total operating cost of otherwise economical diesel engines. As an answer to this problem, the Hancock Diesel Service Co., 371 Walnut St., Findlay, Ohio, offers a reconditioning service on a nationwide mail-order basis. Worn injection equipment forwarded to the company's plant is reworked and sent back to the owner thoroughly inspected and packaged.

Established five years ago, the concern now has facilities for the repair of General Motors unit injectors for the Series 71 engine, and plungers and bushings for General Motors injectors of all series. The company is also equipped to service American Bosch and International pumps, Caterpillar pumps and nozzles, and Cummins injectors.

To keep the cost of its reconditioning service as low as possible while retaining high standards of quality, Hancock Diesel Service has adopted mass production techniques wherever feasible. The reconditioning work is done on modern grinding, lapping, and honing machine tools. Modern air and electrical gages are used to measure the very close tolerances that are required in injection equipment. The plant also has a complete hard-chrome plating shop.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 93.

10:00 P.M. 8:00 A.M.

Scrap value: $65

... but our Hartford Contractors' Equipment policy paid us $12,250!

(Based on Company File #63028)

Our men had been working at the saw mill. When quitting time came, they put our tractor and the straddle carrier in the mill's planing shed.

During the night, the shed caught fire. Our two pieces of equipment—worth over $12,000 – were a total loss. What was left brought $65 as scrap.

I'm mighty glad we were prepared for something like that. Under our Contractors' Equipment policy, the Hartford Fire Insurance Company paid us $12,256.70.

Are you "prepared for something like that," too?

It doesn't have to be *fire*. Wherever your equipment is, lots of hazards lie in wait for it. Theft, for example. Or damage by explosion, collision, overturn, landslide, windstorm or riot.

That's why we suggest the *broad protection* of a Hartford Contractors' Equipment policy.

Have your Hartford Fire Insurance Company Agent or your insurance broker give you the complete facts about this insurance, outline a sound program of protection for *your* equipment—now.

Year in and year out you'll do well with the

Hartford

Hartford Fire Insurance Company • Hartford Accident and Indemnity Company
Hartford Live Stock Insurance Company • *Hartford 15, Connecticut*

How much is your equipment worth?

The Hartford Fire Insurance Company has prepared a free booklet, *Your Machinery and its Actual Cash Value*. Send for a copy. It may help you avoid a big loss.

C&E 6-55

HARTFORD Fire Insurance Company
Hartford 15, Conn.

Please send me a free copy of *Your Machinery and its Actual Cash Value*.

Name_____
Firm_____
Street_____
City_____ Zone____ State_____

MULLER MIXERS *and* POWER TROWELS *set quality standards in their fields*

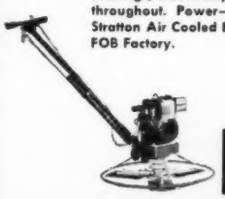
Muller's earliest objective—to make the best possible plaster and mortar mixer and sell it for the lowest possible price—was achieved by: (1) specialization on a few models . . . (2) careful selection of materials and components . . . (3) experienced workmanship . . . (4) sound distribution methods. Other Muller Machines, also, rank high in their fields for the same reasons.

PLASTER AND MORTAR MIXERS

Made in 2, 3½, 6, 6 to 8, and 9 cu. ft. sizes. Electric motor or gas engine power. All models have Muller Lifetime Paddle Shaft Seal to protect bearings. Power throwouts on smaller models, built-in disc clutch on larger. Many other features. Priced $180 to $996 FOB Factory. Rubber scraper blades are available for all sizes.

CONCRETE MIXERS

3 models, 3 to 6 cu. ft. capacities, tilting type. Ample size drums, fast mixing action, Timken Bearings, electrically welded, sturdy construction throughout. Power—electric motor or Briggs & Stratton Air Cooled Engines. Prices $230 to $660, FOB Factory.



POWER TROWELS

2 sizes—29" diameter, 1¾ HP; and 34", 2¼ HP Briggs & Stratton Engines. Stationary guide ring eliminates hand troweling when finishing along baseboard. Engine speed regulated by governor control on handle.

SEND FOR INFORMATION FOLDERS AND NAME OF LOCAL DEALER

MULLER MACHINERY COMPANY, Inc.
Metuchen 15, New Jersey
Cable Address, MULMIX

Air Placement Equipment Co., Kansas City, Mo., used its own Airplaco Bondactor gunning equipment to gun concrete on the dry-block walls of its new plant. The wire mesh gave added strength to the surface, also guided crews in building up the gunned - concrete exterior.

Case history

Gunned concrete is used on low-cost plant project

Gunning a concrete shell onto walls of concrete blocks stacked without mortar proved a practical and efficient method of construction for Air Placement Equipment Co., manufacturer of Airplaco Bondactor concrete-gunning equipment, which used its own method to build a plant at Kansas City, Mo.

After laboratory tests showed the gunned concrete greatly increases the compression load of wall sections, Air Placement anchored bar joists and steel beams on the standard built-up roof to the wall sections. Wire mesh was used in the gunned concrete on the walls both to add strength to the waterproof surface and to serve as a guide in building up wall thickness.

The gunned concrete also was used to lock the steel window frames in place and form a watertight seal around the windows.

Air Placement reports that the savings in time, labor costs, and material on its plant project were considerable.

Improved hydrometer for soil testing

■ An improved Taylor hydrometer for determining soil particle size is equipped with Bouyoucos grams-per-liter scale to ASTM and AASHO specifications.

An important refinement in the new hydrometer is a streamlined body which reduces the amount of material settling on the shoulders of the instrument, makes accurate readings easier, and diminishes agitation of the oil suspension.

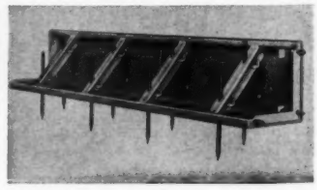
In addition, improved uniformity of size and shape of the instrument results in uniformity in volumetric displacement. A two-sided scale makes reading more convenient.

For further information write to Taylor Instrument Co., 95 Ames St., Rochester 1, N. Y., or use the Request Card at page 18. Circle No. 119.

Road form has two faces, each of different height

■ The new Heltzel Dual-Duty road and highway form has two working faces, each of a different height. Its design enables a contractor to get two standard heights from a single form simply by turning the form on its side. These form faces are made in any height combination to customer specifications.

Built entirely of manganese steel for greater strength, the new form is strong and easy to set up. It is furnished with Heltzel hardened-steel stakes made of re-rolled rail.



Heavy deep-pressed channel sections replace conventional stake pockets. These sections are formed to the inside of both treads and flanges to give added strength to the tread section.

Angle wedges of new design are set in the channels so that they will not come out. They provide a safe lock regardless of which side of the form is up. The dowel lock ends provide the form with positive locking at all three corners. Dowels are pointed to simplify alignment.

If forms are to be used with conventional equipment, they can be supplied with a standard slide-lock.

For further information write to Heltzel Steel Form & Iron Co., Warren, Ohio, or use the Request Card at page 18. Circle No. 150.

ST. JOHN SHOPPING CENTER, St. John, Missouri, showing how Cemesto Panels combine with aluminum accessories to provide handsome, modern exterior.
Architect and Contractor: Fischer and Frichtel, Inc.

Unlimited designs made possible with attractive new metal accessories

More and more architects who seek versatility and low cost in building materials are specifying Cemesto Panels. Because here are Structural Insulating Panels that build attractive curtain walls when used alone . . . or blend harmoniously with other wall materials such as brick, stone, wood, glass, and metals.

MANY BENEFITS

Each Cemesto Panel is a complete self-containing curtain wall unit with high insulation value, exceptional structural strength, and pleasing finish. The hard, smooth, stone-gray surfaces afford excellent light reflection and add new beauty. Panels can be worked with ordinary tools on the job, or pre-cut at the mill for faster application. Quickly attached to steel framing with metal accessories, or to wood framing with nails or screws.

DOUBLE-PURPOSE ACCESSORIES

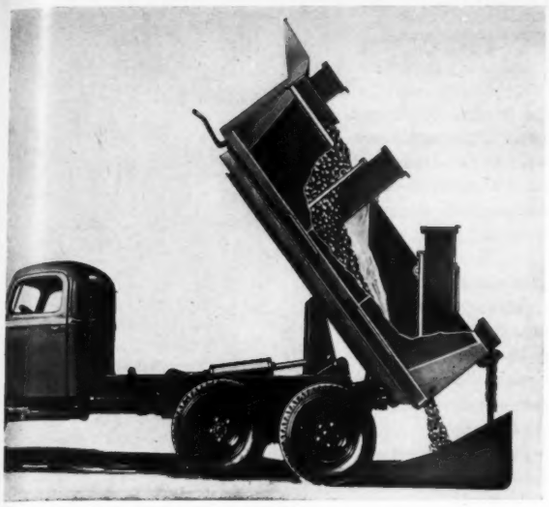
New extruded aluminum accessories aid Cemesto Panels in lending beauty to curtain walls. They have built-in Neoprene gaskets for weather tightness. Exterior face of these battens has a regular—or satin-finished—surface which harmonizes with gray Cemesto Panels.

To the architect, Cemesto Panels bring a remarkably versatile building material that can be used for curtain walls, roof decks, partitions. Write today for New File 5500 . . . 52-page simplified data book on design and application details of Cemesto Structural Insulating Panels. The Celotex Corporation, Dept. CE-65, 120 S. LaSalle St., Chicago 3, Ill.

***Cemesto Panels** are strong, rigid, permanent insulating structural units! Their core is Celotex cane fiber insulating board effectively protected against dry rot and termite attack by the exclusive Ferox® Process. Non-combustible cement-asbestos facings are bonded to both sides of this insulating core by a moisture-proof adhesive. Cemesto Panels resist fire, weather, and wear, need no painting or maintenance.

KEARNEY-TRECKER PLANT, Special Machinery Division, Milwaukee, Wis., presents striking exterior of Cemesto Panels with harmonizing stainless steel accessories. Total Cemesto Panel footage, including curtain walls and department partitions . . . 70,000 sq. ft. Designer and Engineer: V. K. Boynton.

Another Famous CELOTEX Product
CEMESTO
REG U S PAT OFF
STRUCTURAL INSULATING PANELS
THE CELOTEX CORPORATION
120 S. LA SALLE STREET, CHICAGO 3, ILLINOIS



This cutaway view shows the operation of the new Cem-Matic cement box. Attached to the partition gates of batch trucks, the box makes it possible to load skip mixers with cement and aggregate in a single operation.

Box for batch trucks discharges cement mixing it with aggregate

■ A new type of cement box for use on trucks transporting aggregate to skip mixers has been developed by Dravo-Doyle Co., Fifth and Liberty Aves., Pittsburgh 22, Pa. Attached to the partition gates on batch trucks, the all-steel Cem-Matic box not only facilitates loading and unloading of cement but also mixes it with the aggregate during the dumping operation.

The mixing and discharge operation is simple. Aggregate in the truck keeps the doors of the loaded cement box tightly shut. As the truck bed is raised to discharge a batch into the skip mixer, the aggregate flows out and the cement box doors open. Cement starts to flow after about four to five cubic feet of aggregate has been unloaded, forming a blanket over the aggregates. The boxes are quickly removed for normal dumping and hauling jobs.

Each box has a 15-cubic-foot capacity and is 71 inches wide, 34½ inches high, and 14¾ inches deep.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 124.

Foundation coating for below-grade masonry

■ A black, bituminous elastic coating that protects below-grade masonry from moisture is described in a folder from Samuel Cabot, Inc., 141 Milk St., Boston 9, Mass. The coating also protects against termites and other insects.

Other Cabot products described include a clear brick waterproofing, clear cement silicone waterproofing, roof coating, stucco brick coating, and a brush cleaner.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 98.

Preventive maintenance for 5-speed transmissions

■ A new preventive maintenance chart for conventional five-speed transmissions is available from the Fuller Mfg. Co., Kalamazoo, Mich.

The chart covers every check point from the hand-brake lever assembly to splines on the output shaft. Typical sections describe checks without partial disassembly of chassis or cab, with floor boards removed, with drive line dropped, and with universal joint companion flange removed.

Covering all conventional five-speed transmissions, the chart is part of Fuller's over-all program to help truck owners, maintenance supervisors, and operators get more efficient and more economical transmission operation through better maintenance.

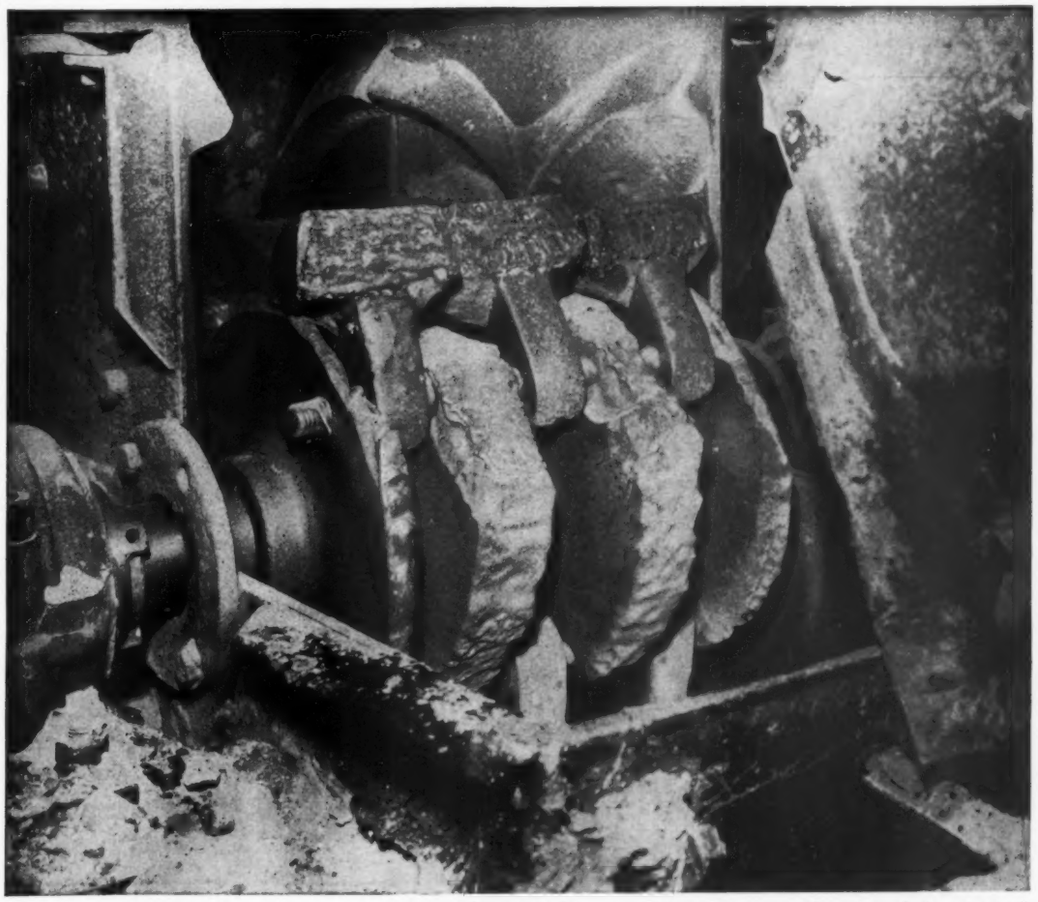
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 67.

Surveying instruments now easy to center

■ A "standout bubble" which makes centering easier under difficult light conditions has been added to all transits and levels manufactured by W. & L. E. Gurley, Troy, N. Y.

The ends of a glass vial holding the bubble are tinted black, and the black surface reflects the light off the end of the bubble to increase visibility.

For further information write to the company, or use the Request Card at page 18. Circle No. 91.



The periphery of the hammer mill rotor discs pictured here is regularly maintained with Coated Tube Stoodite, a high alloy electrode providing extreme wear resistance.

HOW TO GET MORE FROM YOUR HAMMER MILLS

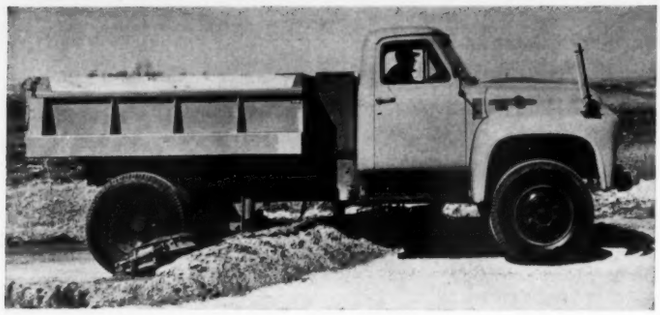
Crushing decomposed rock and clay to produce material for wet-finished brick is a rough job and mighty tough on mill hammers. The Chattahoochee Brick Company in Chattahoochee, Georgia, has established a maintenance procedure that is producing more material at considerably lower cost by the use of Stoody alloys.

The raw material is dry-crushed in a pair of double rotor hammer mills. The problem, as usual, is to maintain the corners on hammers and keep them out to size as long as possible. The corners and edges of the hammer are, of course, subjected to severe impact and abrasion. At Chattahoochee Brick Company *new* manganese hammers are capped with an overlay of Stoody 21. As corners become rounded and the efficiency of the mill drops off, the hammers are pulled and turned over to the weldor for rebuilding.

Worn hammers as shown in the illustration are brought back to size with Stoody Manganese and the entire wearing area is hard-faced with Stoody 21. Records show that some hammers have been rebuilt and returned to service as much as 20 times. Thus the hard-facing program shows a remarkable saving in replacements as well as in downtime, and produces a greater volume of usable, properly sized particles.

Your Stoody dealer would be glad to advise you on the maintenance of your crushers and other heavy equipment subject to costly wear. Check the yellow pages of your telephone book or write to the company for complete descriptive literature.

STOODY COMPANY
11936 East Slauson Avenue
Whittier, California



This new Lull underbody truck grader can do road-maintenance work at speeds up to 15 mph without blade chatter.

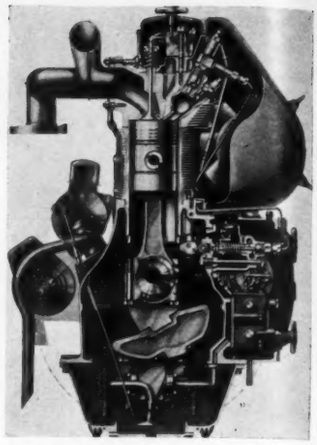
Truck grader designed for higher working speeds

■ An improved underbody truck grader that can be operated at speeds of 6 to 15 mph has been announced by Lull Engineering Co., 7700 Cedar Ave. S., Minneapolis, Minn. The manufacturer estimates that the higher working speed of the grader will reduce road-maintenance cost by 30 to 40 per cent.

The higher working speed has been made possible by leveling skis behind and near each end of the moldboard. These skis and vertical-supporting hydraulic cylinders prevent blade chatter by absorbing road shock and bounce transmitted by truck springs and tires.

An electrical-solenoid system for actuating the hydraulic valves simplifies operation. Control levers are mounted in the truck cab. The moldboard can be raised, lowered, tilted end to end, and otherwise adjusted from controls in the cab.

For further information write to the company, or use the Request Card at page 18. Circle No. 28.



Cutaway view of a four-cycle Deutz diesel engine.

Air-cooled diesel engines give dependable service

■ Deutz air-cooled diesel engines, manufactured in Germany, are available in this country through Diesel Energy Corp., 82 Beaver St., New York 5, N. Y. Available in two series, the line includes units with from 1 to 8 cylinders and a 12-cylinder model. The engines, offering a power range of 15 to 250 horsepower, are recommended for powering tractors, trucks, excavators, conveyors, compressors, pumps, and other equipment.

Direct air cooling offers a number of advantages over water-cooling in diesel engines. Problems caused by leaks, scale deposits, freezing and thawing are eliminated. In addition, an air-cooled engine warms up faster. This results in faster starting, reduced consumption of fuel and lubricating oil, and less wear on cylinders. It is reported that the life of air-cooled cylinder liners is two to three times that of water-cooled engines and that lubricating oil lasts twice as long.

Maintenance is simplified, since air-cooled diesel engines not only have independent cylinder heads, but also individual easily-removed cylinders. Repairs therefore, are generally made faster on these engines than on water-cooled engines.

For further information write to the company, or use the Request Card at page 18. Circle No. 96.

Prime-Mover appointment

H. W. Peterson has joined the sales staff of The Prime-Mover Co., Muscatine, Iowa, and will represent the company in the southeastern states.

2

TWO FOR THE ROAD

Watch a new highway under construction and chances are that Berger Instruments—like these latest model transits—are marking them out precisely—the 6¼" transit for the most exacting requirements; Polara for the less complex. Just as so many Bergers have been doing for over 84 years everywhere in the world—on roads, large and small buildings, bridges and every type of construction project.

If you've never owned a Berger, you owe it to yourself to learn how accurate it really is... how little repair it requires... the lifetime of trouble-free service you can count on... how inexpensive a Berger Instrument is in the long run.

Put yourself behind a Berger—so many road builders do. Write for "Accuracy in Action". C. L. BERGER & SONS, INC. 37 WILLIAMS ST., BOSTON 19, MASS.

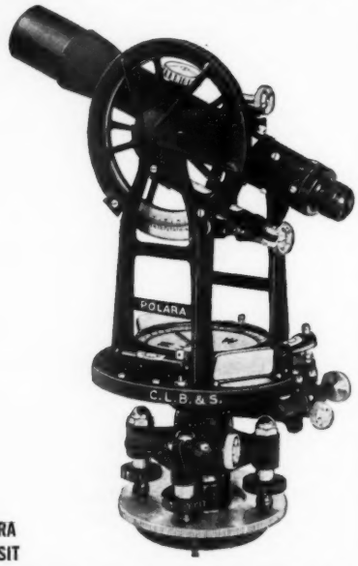
THE BEST IN SIGHT IS

BERGER

ENGINEERING AND SURVEYING INSTRUMENTS... SINCE 1871

1955 BERGER BRONZE TRANSIT

Supreme achievement of 84 years of instrument making. Newly designed optical system, 6¼" transit has 26 power telescope, coated optics, resolving power 3½ sec., effective aperture 1.430 inches (36mm), field of view 1 deg. 6 min. Fully enclosed nickel silver leveling screws, replaceable bronze bushings, 3¾ ft. short focus. Reversion vial included. Mahogany transit case and white ash tripod at no extra cost.



POLARA TRANSIT

Exceeds government specifications for 5½" transits—fills need for accurate low cost standard engineers' transit reading to one minute. Brass and bronze construction, light weight. 5½" horizontal circle; 5" vertical circle. Newly designed optical system for precise stadia readings at greater distances. 22 power telescope with resolving power of 4 sec. Short focus 3 ft. Fully enclosed nickel silver leveling screws. Mahogany transit case, white ash tripod at no extra cost.

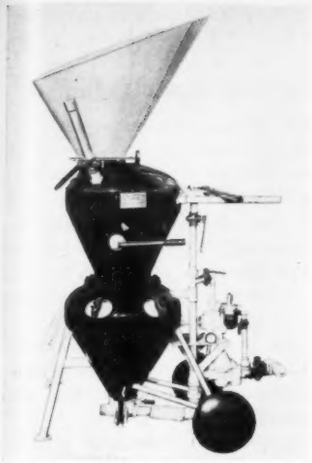
BARTLETT MFG. CO.
3035 E. Grand Blvd.
DETROIT 2, MICH.

WE Combination Pruner and Saw
EASILY CARRIED IN SMALL CAR

Length	Weight
30 in. Pruner	2¾ lbs.
30 in. Saw	1½ lbs.
72 in. Section	2 lbs.
72 in. Section	1¾ lbs.

This combination can be quickly and easily assembled to make either of these two tools:
1 Heavy Duty Tree Trimmer (1¼" capacity) 14½ ft.
1 Fast-cutting Pole Saw 14½ ft.
If other lengths are required, specify extra sections 4 or 8 ft. long, to make the necessary length.

No. 1-WE Pruner Head Section 30"
No. 44-WE Saw Head Section 30"
Intermediate Extra Section 6'
Handle Section 6' Ash
Price $27.55 F.O.B. Detroit



Blastcrete concrete-placing guns can handle material of high moisture content and maintain a steady flow. This is the small Model BG-1, most recent addition to the line.

Concrete gun maintains steady material flow

■ Its ability to maintain a steady flow of materials with better hydration is a feature of the improved Blastcrete concrete-placing gun.

The mechanism of the gun is designed to handle materials of high moisture content, making it no longer necessary to buy dry materials or protect them from moisture. Rebounds are immediately re-usable. A new slide valve for the loading chamber provides for easier and faster loading. The flow of material is easily adjustable while the gun is in operation.

The Blastcrete gun places 1 to 8 cubic yards per hour, or about 2 cubic yards per hour per 100 cfm of air.

The most recent addition to the Blastcrete line is the Model BG-1, a small patching gun with all the features of larger machines. Highly portable, the new model is designed for one-man operation.

For further information write to Blastcrete Equipment Co., 11154 Santa Monica Blvd., Los Angeles 25, Calif., or use the Request Card at page 18. Circle No. 64.

Pencil tracing cloth

■ The advantages offered by Arkwright pencil tracing cloth in various drafting uses are discussed in a folder available on request. Among these are the ability of the tracing cloth to hold the draftsman's precisely drawn lines and to withstand erasure without ghosting.

Made from woven cotton fibres, the material is available in three types. A clear white transparent cloth produces sharp high-contrast drawings. A blue satin-finish cloth with clear transparency saves time where ink tracings are not required.

Also available is the all-purpose Matsurf cloth that is specially treated to take pencil graphite in a sharper blacker line and that also has superior receptivity to ink.

To obtain this literature write to Arkwright Finishing Co., Providence, R. I., or use the Request Card at page 18. Circle No. 32.

New all-steel waler jack

■ An all-welded all-steel waler jack used to provide solid scaffolding on all types of concrete construction including retaining walls, dams, and bridges, has been placed on the market. Made by Superior Scaffolding Co., 5624 Bankfield Ave., Culver City, Calif., the waler jack may be used on the bottom waler. It can be bolted to the wall and used on either 2×4 or 2×6 walers.

An important feature is its double hook which slips over the waler for a firm grip. This distributes the load laterally making side-sway or shifting impossible, according to Superior.

For further information write to the company, or use the Request Card at page 18. Circle No. 115.

Konkure Concrete Curing Compounds

For twenty years never a City, County, State or Federal test failure . . . *There must be a reason! ! !*

YOU PAY NO MORE FOR THE FINEST OF CONCRETE CURING COMPOUNDS

★ *KONKURE NOW OFFERS:*

- Clear—Black-Gray and White Pigmented-Resin Tilt-Up . . . Specified in Original Bureau of Reclamation Specifications.
- Concrete Sawing, Joint Filling and Curing Application for Airports, Highways, Commercial, Engineering Projects.
- Specify KONKURE . . . Specify the Cadillac of Concrete Curing Compounds.

★ *OTHER KONKURE PRODUCTS . . .*

- KONSET . . . A Hardener and Stabilizer for Topping and Bonding Old Concrete to New.
- KOLORBLEN . . . Concrete Coloring . . . A Variety of Colors.
- SERVICISED EXPANSION BOARD . . . Full or Cut.
- RUBBER WATER STOPS . . . PARA-PLASTIC Joint Sealer, Regular and Para-Plastic JFR.
- Western States Distributor for Block Mesh.

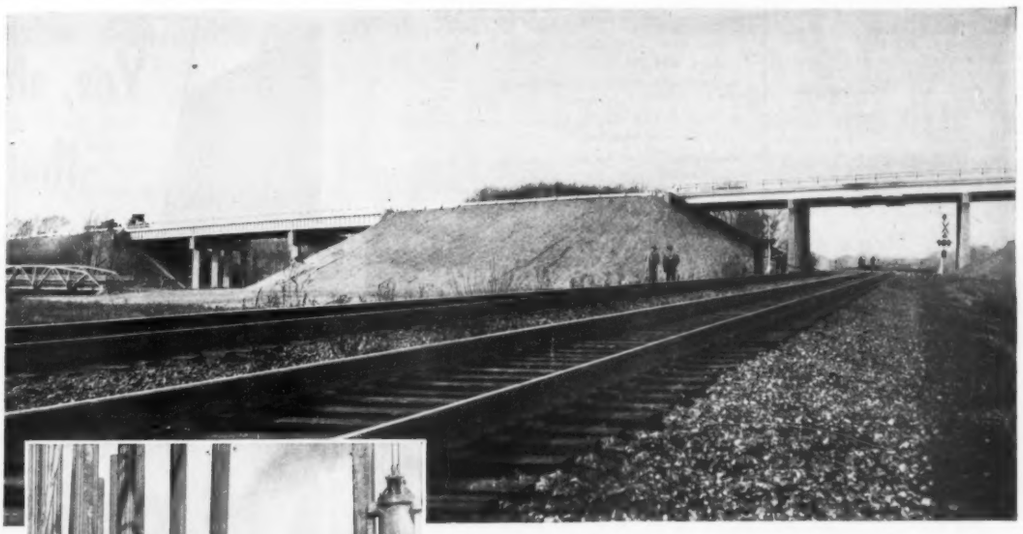
WRITE TODAY FOR FULL INFORMATION

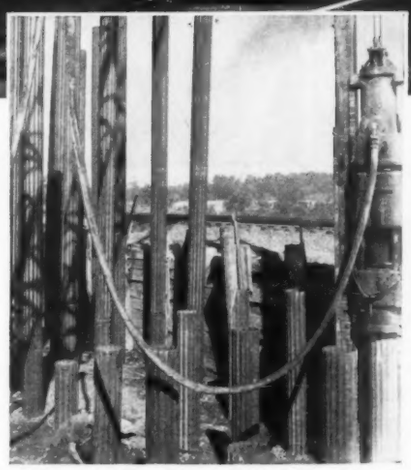
DEALER INQUIRIES INVITED

KONKURE COMPANY

Concrete Curing and Application

6742 STANTON AVE. P. O. BOX 336, BUENA PARK, CALIF. PHONE LAWRENCE 2-2841





Pile driving and extending under way for Ohio's two new Route 30 bridges (above) engineered by Bureau of Bridges, Ohio State Highway Dept. 286 eighty-foot Monotubes, with 8" tip and 12" butt diameter, were driven. General Contractor: The Lewis and Frisinger Co., Ann Arbor, Mich. Pile Driving Contractor: The Purdy Construction Company, Mansfield, Ohio.

Note the narrowness of this old bridge and the hazardous approach curve which have now been eliminated by Ohio's new Route 30 bridges.

MONOTUBES "go in" for faster, safer traffic and unmatched economy!

THESE new bridges at East Union, Ohio, on the heavily traveled Lincoln Highway, eliminate a triple threat . . . a small bottleneck bridge, a bad curve, and a hazardous railroad crossing. Both bridges are supported by rugged, cold-rolled Monotube foundation piles.

And speaking of eliminating threats, here's another case where Monotubes saved time and money by licking an unexpected problem. The piles had to go much deeper than anticipated, but due to Monotubes' simple field extendibility, the required penetrations were readily achieved using the same light crawler crane with which the job was started—no penalty for heavier equipment.

You stand to gain many other advantages with Monotube piles. Write to The Union Metal Manufacturing Co., Canton 5, Ohio, for Catalog No. 81.

UNION METAL

Monotube Foundation Piles

Harnischfeger appoints

The new assistant sales manager of the P&H Electric Shovel Division of the Harnischfeger Corp., Milwaukee, Wis., is Gerard T. Raubach. Mr. Raubach joined the company in 1939 as a machinery-erecting engineer and has held various positions in electrical engineering.

Ready-made concrete forms for piers and columns

■ Ready-made forms for pouring concrete piers, columns, footings, or pads have been placed on the market by Delta Co., 333 W. 24th Place, Chicago, Ill. Lightweight and easy to handle, Deltaforms are delivered flat in convenient bundles. One man can carry as many as 25 to the job site.

Square-shaped when opened and set in place for pouring, the forms become round under the weight and pressure of the poured concrete. Since they eliminate the necessity of making forms for each individual use, Deltaforms are expected to save considerable erection and stripping time. No bracing or shoring is required.

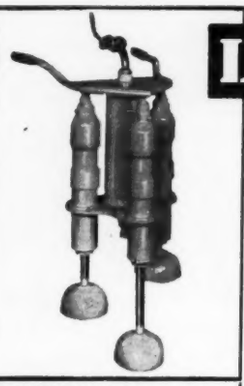
For further information write to the company, or use the Request Card at page 18. Circle No. 82.

Portable asphalt plants

■ A new line of portable and semi-portable asphalt plants is now available from McCarter Iron Works, Inc., Norristown, Pa., according to a leaflet from the concern. The plants include units of 2,000 to 6,000-pound mixer capacities. Fast set-up features have been added to the advantages found in McCarter stationary plants.

Also available are individual units including dryers, mixers, asphalt buckets, aggregate hoppers, bins, and feeders.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 45.



LOW BIDDER?

Insure your profit . . .

USE TRIPLEX

BACKFILL TAMPERS

Standard and Super Models

Why "TRIPLEX"?

. . . Because you get:

1. Highest compaction production to any desired density on all soils, including free-draining soils.
2. Lowest original and lowest maintenance cost.
3. One man plus one "TRIPLEX" production equals production of 5 men plus 5 single tampers plus more air.
4. Exclusive Air Filter, assuring continuous, trouble-free operation.
5. Horizontally swinging swivel air intake connection for ease of handling.
6. Air manifolded for correct distribution to all three tampers.
7. Choice of all makes of tampers.

GUNDERSON-TAYLOR MACHINERY COMPANY

1237 Shoshone Street • Denver 4, Colorado

GUNDERSON-TAYLOR MACHINERY CO. CE 6-55
1237 Shoshone Street
Denver 4, Colo.
Please send "Compaction Handbook" and all information about "TRIPLEX" Backfill Tamper.

Name.....
Title.....
Street.....
City.....
State.....
Firm.....
Street.....
City.....
State.....

DIG... LOAD... FAST!

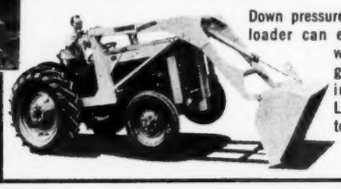
WITH SMOOTH OPERATING SHAWNEE EQUIPMENT

Pat. No. 2,669,367

SCOUT DITCHER

Digs 12 ft. deep. Various bucket sizes available. Digs under 8 ft. ceiling. Operation smooth and powerful. Easy to install on most all tractors. Removes from tractor in minutes.

SHAWNEE "SPECIAL" LOADER



Down pressure so great, this loader can even lift front wheels off the ground. Removes in ten minutes. Lifts 2,000 lbs. to 9 ft.

SHAWNEE LOADMASTER with HYDRO-CLAM

OTHER ATTACHMENTS AVAILABLE

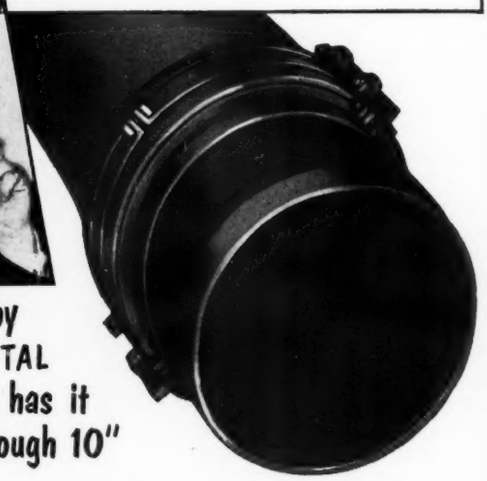
Working in combination with Hydro-Clam for digging spot excavations, the Loadmaster performs many labor saving jobs. This heavy duty industrial type loader has double acting, oversize hydraulic system. Raising height sufficient to clear average size trucks equipped with sideboards. Bucket capacity is 12 cu. ft. High down pressure enables digging and handling of tough, hard-packed material. Bucket roll-back is provided for handling loose material.

AD #491-A

SHAWNEE MANUFACTURING CO., INC.

1947-M North Topeka Avenue • Topeka, Kansas

Yes, sir! You can have that Suction Hose by noon today!



Your nearby CONTINENTAL warehouse has it —1½" through 10"

You'll get *fast* delivery when you call any nearby Continental Warehouse listed below. They *all* carry big stocks of Suction Hose—many have both 8" and 10" ready to ship the minute you call.

You have no need to wait for long distance shipments. No need for delays that eat into profits. No need to tie up your capital in costly inventories.

So, next time you need Suction Hose (or any other hose*) call or wire the nearest Continental Warehouse. You'll like this fast, stand-by service ready to give you the hose you *want—when* and *where* you want it.

HOSE by CR CONTINENTAL

*A complete line for Contractors: Air, Water, Steam, Suction, Discharge and Pile Driver Hose. Protective Clothing, Boots and Gloves. Send for latest catalog.

Tear out this list to call for fast delivery on hose from CONTINENTAL WAREHOUSES

ATLANTA 5, Ga. 477 Eighth St., N.W.
BALTIMORE 1, Md. 122 South Howard St.
BOSTON (Allston 34), Mass. 12 Franklin St.
BUFFALO 3, N. Y. 115 Clinton St.
CHICAGO 10, Ill. 10 West Hubbard St.
CINCINNATI 2, Ohio 49 Central Ave.
CLEVELAND 15, Ohio 2731 Prospect Ave.
DETROIT 27, Mich. 13801 Schoolcraft Ave.
INDIANAPOLIS 2, Ind. 309 North Capitol Ave.
MEMPHIS 3, Tenn. 268 Madison Ave.
NEW YORK 7, N. Y. 81 Murray St.
PHILADELPHIA 6, Pa. 311 North Randolph St.
ST. LOUIS 8, Mo. 4018 Olive St.
SYRACUSE 3, N. Y. 739 Montgomery St.

CONTINENTAL RUBBER WORKS • 1989 LIBERTY ST. • ERIE 6 • PENNSYLVANIA

This new Colonial continuous mixing and pugging machine produces mixes for concrete blocks, roof fill, and road base soil aggregates.

Continuous mixers handle fine aggregate and slurry

■ A new line of continuous-type mixing and pugging machines that handle material from dust to 1½ inches in size in either a dry state or in a slurry is available from The Colonial Iron Works Co., 17643 St. Clair Ave., Cleveland, Ohio. The units have been used to mix aggregate and slurries for the manufacture of concrete building blocks, lightweight concrete roof fill, sand and lime admixtures for mortar, and highway-base soil aggregates.

Features of the mixers include an all-welded frame of heavy steel plate; standard replaceable mixer trough of heavy-gage material; and box-type construction. A safety guard installed over the mixing portion of the trough, a simplified drive mechanism with a standard NEMA frame motor for easy replacement, and a diversion plate at the mixer discharge are other operating advantages built into the equipment.

Feed equipment for the mixers is available for use with any type of standard trough. Bins, bucket elevators, and conveyors are also offered to make complete systems. While the mixers are designed basically as stationary units, they are adaptable to portable use.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 15.

Tools for tree trimming

■ Tools for tree trimming are shown in literature from Bartlett Mfg. Co., 3003 E. Grand Blvd., Detroit 2, Mich.

A pruner and saw combination illustrated offers two separate tools as head sections, each mounted on a short length of ¼-inch-diameter pole. Extra sections 4, 6, and 8 feet long can be added to the pole through a round ferrule and connecting sleeve at the lower end.

The pruner head section is 30 inches in over-all length and weighs 2¾ pounds. It has a compound-lever side-cutting head with forged tool-steel blade, lever, link, and hardened hook. The pole saw head section has a 16-inch saw blade that is adjustable to three angles.

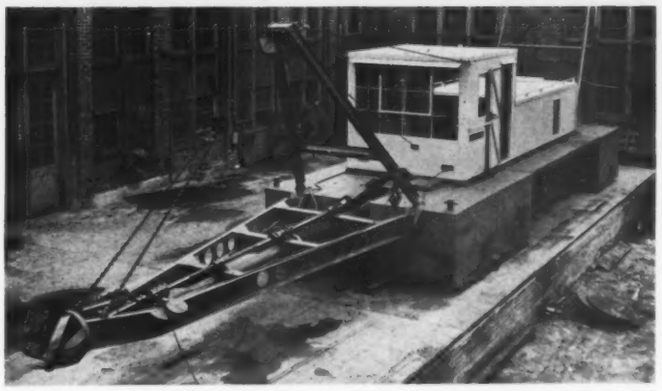
To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 61.

Line of contractors' pumps

■ A line of self-priming centrifugal contractors' pumps is illustrated in literature from McGowan Pump Division, Leyman Mfg. Corp., 58 Central Ave., Cincinnati 2, Ohio. Offered in sizes from 1½ to 8 inches, the McGowan pumps are available on pneumatic wheels, skids, steel wheels, or wheelbarrow mountings.

Features listed are all-welded construction, automatic priming, an improved open-type nonclogging impeller, and a hardened wear plate. Large access plates make inspection and repairs easier. A drain plug drains all water from the unit.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 48.



HIGHLY PORTABLE and easy to assemble, this small general-purpose dredge is said to pack a lot of power for its comparatively small size. Able to work in areas not accessible to larger equipment, the dredge is used for deepening river, bay, and harbor channels, for irrigation projects, and for dam building. It is shipped dismantled on a truck or freight car and then reassembled on the job ready for action within 12 hours. For further information write to Georgia Iron Works Co., Augusta, Ga., or use the Request Card at page 18. Circle No. 111.

Nation Wide Distribution

★ ★ ★ ★ ★

We are proud to list among our exclusive distributors, these leading construction equipment supply companies. For all of your concrete forming needs contact the distributor in your area for prompt service.

ARIZONA
Superior Equipment Co.
2221 So. 19th Ave.
Phoenix, Arizona

ARKANSAS
Lyons Machinery Co.
904 Broadway
Little Rock, Arkansas

COLORADO
K-C Construction Supply Co.
19th Avenue at Bryant
Denver 4, Colorado

FLORIDA
Neff Machinery, Inc.
2601 N.W. 5th Ave.
Miami 37, Florida

IOWA
Gierke-Robinson Co.
210 E. River St.
Davenport, Iowa

KANSAS
The Victor L. Phillips Co.
3611 N. Broadway
Wichita, Kansas

MASSACHUSETTS
Universal Concrete Accessories, Inc.
51 Barnstable Street
Swampscott, Massachusetts

MINNESOTA
William H. Ziegler Co., Inc.
2929 University Avenue
Minneapolis 14, Minnesota
William H. Ziegler Co., Inc.
37th and 6th Avenue, West
Hibbing, Minnesota
William H. Ziegler Co., Inc.
330 Garfield Avenue
Duluth, Minnesota
William H. Ziegler Co., Inc.
1115 S. Main Street
Crookston, Minnesota

MISSOURI
The Victor L. Phillips Co.
1600 Baltimore St.
Kansas City 8, Missouri
Geo. F. Smith Company
5215 Manchester Avenue
St. Louis 10, Missouri

NEBRASKA
Anderson Equipment Co., Inc.
Merchants Nat'l Bank Bldg.
13th and Farnam Sts.,
Omaha 8, Nebraska

NEW YORK
Builders Rental Equipment, Inc.
46 Skillen St.
Buffalo 23, New York
Universal Builders Supply Co.
51 E. 42nd St.
New York 17, N. Y.
Universal Builders Supply Co.
212 Mains Avenue
Syracuse 7, N. Y.

OKLAHOMA
The Victor L. Phillips Co.
6901 East 11th St. on U.S. 66
Tulsa, Oklahoma
The Victor L. Phillips Co.
1222 W. Main St.
Oklahoma City, Oklahoma

PENNSYLVANIA
Dravo-Doyle Company
2601 Preble Avenue
Pittsburgh 33, Pennsylvania

TENNESSEE
Tri-State Equipment Company
520 Mulberry at Calhoun
Memphis 2, Tennessee

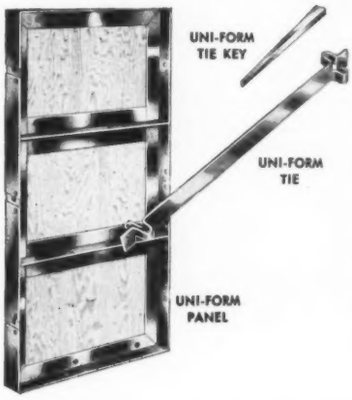
WASHINGTON
Construction Equipment Co.
E. 3823 Trent Ave.
Spokane 6, Washington

WISCONSIN
Hunter Tractor & Machinery Co.
327 S. 16th St.
Milwaukee 3, Wisconsin

UNI-FORM Concrete Forms

SIMPLE... FAST... FLEXIBLE

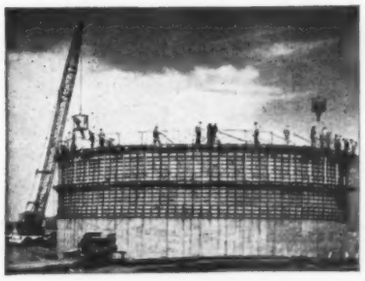
3 BASIC ELEMENTS mean Faster, Easier, More Accurate Forming



Simple mechanical assembly of UNI-FORM Concrete Forms provides faster forming... easier stripping and lowest all around costs. Ready to use when they reach the job, UNI-FORMS guarantee time, material and labor savings on any forming job. Let us prove UNI-FORM advantages . . . send us a set of prints for free recommendation and proposal on your next job. There's no obligation.

FORM CIRCULAR WALLS AT LOWEST COST

- No alignment or bracing on outside.
- Minimum excavation required.
- Free working area.
- Maximum job safety.



UNI-FORMING Circular walls costs less per square ft. of contact area . . . provides unhampered steel setting . . . greater control of concrete placement. Write for details on UNI-FORMING circular walls.

PREFABRICATED CIRCULAR WALL FILLER

Used on outside form only . . . assures true form curvature with standard UNI-FORM Panels.

RENTED...SOLD...RENTED WITH PURCHASE OPTION

UNIVERSAL FORM CLAMP CO.

GENERAL OFFICES AND FACTORY: 1238 N. Kostner • Chicago 51, Illinois
OFFICES AND WAREHOUSES:
CLEVELAND, OHIO • BALTIMORE, MARYLAND • HOUSTON, TEXAS
SAN LEANDRO, CALIFORNIA • LOS ANGELES, CALIFORNIA
SERVICE WHEREVER YOU BUILD... COAST TO COAST
DISTRIBUTORS IN PRINCIPAL CITIES

Copyright 1955 by UNIVERSAL FORM CLAMP CO., Chicago 51, Ill.

New and newly repaired Caterpillar motor graders, scrapers, and other grading equipment stand in the Koss Construction Co. yard, ready for next season's work. *C&E Staff Photos*

MAINTENANCE

Winter maintenance plan reduces summer downtime

Overhaul of large concrete-paving spread during off-season keeps key personnel busy at permanent winter quarters

Its winter maintenance program playing an important part in meeting summer schedules, Koss Construction Co., Des Moines, Iowa, last year beat its season's goal of half a million square yards of concrete paving by more than 100,000 yards.

The nine-month record was made possible largely by a nucleus of key personnel working through the winter at the winter quarters of the company's Show Me Division at Springfield, Mo., and the Sunflower Division at Pauline, Kans., just outside Topeka. This winter work pays off during the construction season, for it permits men to know their equipment better, and this in turn makes for good preventive maintenance and faster repairs in the field.

Work at the Sunflower quarters starts when the last yard of concrete has been placed at the end of the season. Then, every piece of mobile equipment is brought to the 27-acre winter quarters on U. S. 75. Two big Hobbs self-loading trailers, pulled by International R-195 trucks, bring in the larger units. Fifth wheels replace dump boxes on some of the International R-160 batch trucks, enabling them to pull three 8-foot Fruehauf flat-bed trailers which carry some of the lighter equipment. The big pavers and cranes, loaded on flatcars, arrive at the yard via the

TAMPO'S SELF-PROPELLED *outsells all other makes combined!*

NEW for '55 Improved hydraulic steering system

NEW for '55 Muffler and exhaust extension with rain cap

NEW for '55 Increased Horse Power

NEW for '55 Stronger drive wheels

NEW for '55 Triple-Seal wheel grease seal

NEW for '55 Improved heavy duty drive axles

TAMPO MANUFACTURING CO.
1146 W. Laurel St., San Antonio, Texas • Telephone PErshing 3-9171
Teletype No. FAX - TAMPO
Cable Address TAMPO

200,000 LB. CAPACITY
concrete tester

CUBES • CYLINDERS • BEAMS

COMPACT and PORTABLE Entirely self contained. No electrical or pressure connections required.

ACCURATE Meets ASTM and AASHO specifications for hydraulic concrete testing machines.

SIMPLE OPERATION Hand operated, quickly and easily, as photo shows. Large, direct reading, dial indicates results of test.

SOILTEST Incorporated — *Write For New Illustrated Bulletin*

CONTRACTORS AND ENGINEERS

Sante Fe Railroad which serves the yard. In a few days, the bins are the only items of equipment left at the job site. And even these are brought to the yard if the job is complete.

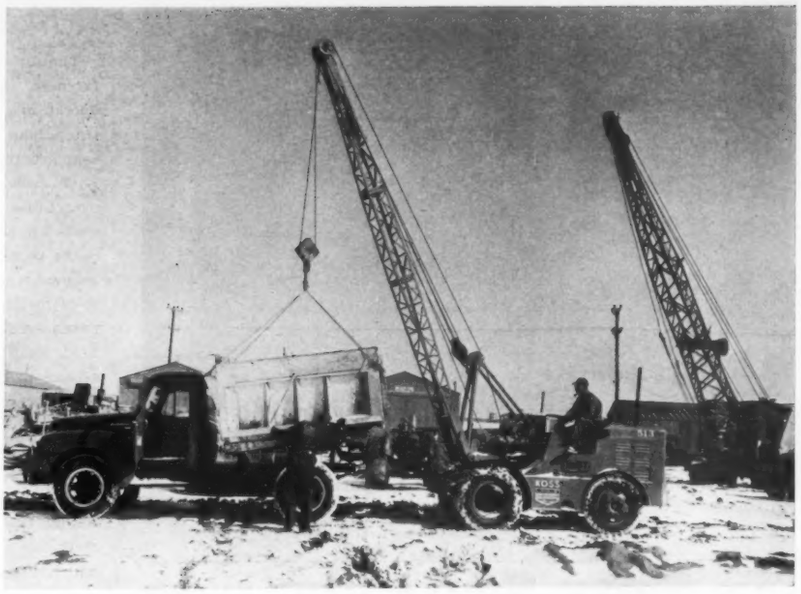
Field offices find winter quarters on opposite sides of the division manager's office. One is a 28-foot Fruehauf van, the other is an Anderson 35-foot custom-built trailer with bath, bedroom, and office, and facilities for hot and cold running water. The division manager, his secretary, and the superintendent have offices in a 20 × 26-foot Armco Steelox building near the main gate. Warm air is circulated through the building during the cold months by a thermostatically controlled gas-burning plant.

Heat for the four Steelox shop buildings is supplied by Herman Nelson oil-burning units. Each heater, serving two of the 24 × 40-foot structures, is housed in a small Steelox building at the rear of the shops. Hot air is conducted to the shops in 12-inch fabric tubes enclosed in 24-inch reinforced-concrete pipe conduits, and cold air is returned to the heater through the concrete pipe. Since there is no open flame in the shops, the fire hazard is reduced.

Steel buildings house shop

Along one side of the yard with these repair shops, is a 20 × 60-foot Steelox warehouse for parts, supplies, and small equipment. Gas-burning units heat the structure, which has eight Shur-Spray automatic extinguishers mounted in the ceiling. These have fusible links which melt at 180 degrees, releasing the gallon of carbon tetrachloride in each container. In the warehouse, as in the repair shops, Kidde dry chemical, and CO_2 extinguishers are located within easy reach of all crew members.

(Continued on next page)



A Mandt crane, used around the yard for all types of lifting jobs, sets a freshly painted two-batch dump body on a new International R-160 truck.

In one of the four Steelox buildings serving as repair shops, a Caterpillar D6 tractor has its engine overhauled while an Oliver 900 wheel tractor awaits repairs.

GREDAG
All Weather
LUBRICANTS

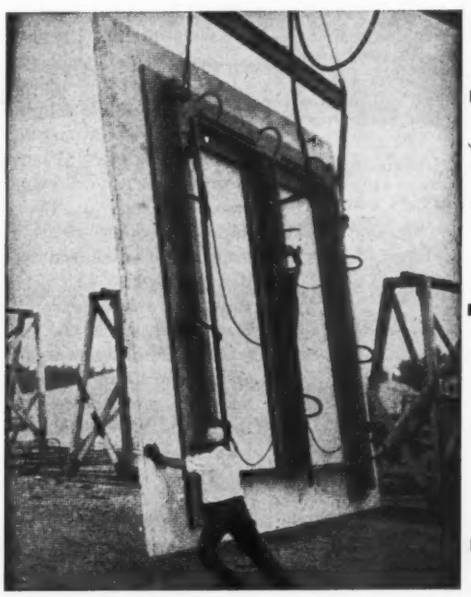
Cut Maintenance and Lubrication Costs on Outdoor Equipment

The enduring character of 'Gredag' lubrication gives true economy plus thorough protection against wear, rust and corrosion on exposed excavating, handling and road building equipment.

Write for FREE Descriptive Folder

GREDAG, INC.
DEPT. 7
NIAGARA FALLS, N. Y.

MAGIC CARPET *for Concrete Handling*



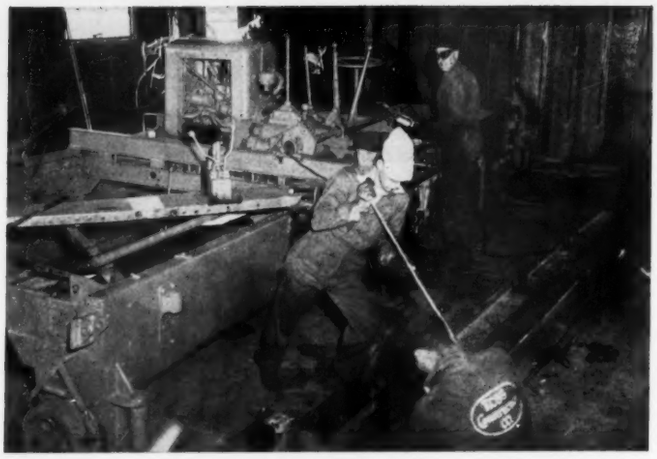
THE VACUUM LIFTER

No inserts or strongbacks to adjust . . . a turned valve does the work. Harnessed atmospheric pressure provides temporary reinforcement — eliminates point stresses and the need for additional steel.

EARLY STRIPPING — EARLY ERECTION

VACUUM CONCRETE, INC.
4210 Sansom Street • Philadelphia, Pa.

Contractor: Concrete Casting Co., Kansas City, Mo.



The maintenance crew in the paving-equipment shop assembles a screed for a Jaeger finisher. This equipment will be cleaned and painted before it is used.

(Continued from preceding page)

The division's crew of 20 key men, foremen, mechanics, and machine operators, working comfortably throughout the winter, is split into four groups to man the repair shops. Each crew has a maintenance and overhaul schedule which keeps it busy from late November until the day the outfit pulls out for the first job the following spring. On their coveralls, crew members wear the Koss sleeve patch—red stars on a circular white field. Each star represents five years service to the company. Most of the men have at least one star, and several boast five.

All the tools and equipment needed to do a thorough maintenance job are located in the four repair shops. Among the numerous items of equipment are a Mandt rubber-tire crane which lifts and carries heavy parts and machines; a 100-ton Rodgers press, a Westinghouse welding generator, and a Thor valve-grinding machine. A Schramm jeep compressor, used for driving form pins on a paving job, provides air for cleaning and painting in the paint shop.

The paint crew goes to work as soon as equipment begins arriving at the yard, using a Kelite steam cleaner to clean one machine for each of the other crews. The Koehring 34-E Twinbatch pavers, Jaeger spreader, Jaeger and Blaw-Knox finishers, and Koehring longitudinal float—usually spattered with hardened concrete when they arrive at the yard—are shuttled onto a concrete platform and thoroughly cleaned by a Sanstorm sand blast machine.

Repair schedule

The two big pavers, completely overhauled each season, are among the first machines to move into the paving-equipment shop for repair. Practically every bearing is inspected and all parts are carefully checked. This type of overhaul, coupled with careful field maintenance during the working season, enables the pavers to be operated for five or six years before they are replaced. Other paving equipment, after being thoroughly cleaned, is given any repair deemed necessary by the paving foreman, paving superintendent, mechanic, and operator.

Once cleaned and delivered to the proper repair shop, a piece of equipment may receive anything from a general checkup to a complete overhaul, depending on the schedule. Rolling out of the repair shops, the machines go to the paint shop where they are cleaned, painted, and provided with a decal bearing the name Koss Construction Co. Trucks and trailers are painted a bright red, grading equipment yellow, and paving machines, orange. By spring, when the fleet is ready to hit the road, the yard takes on a carnival atmosphere.

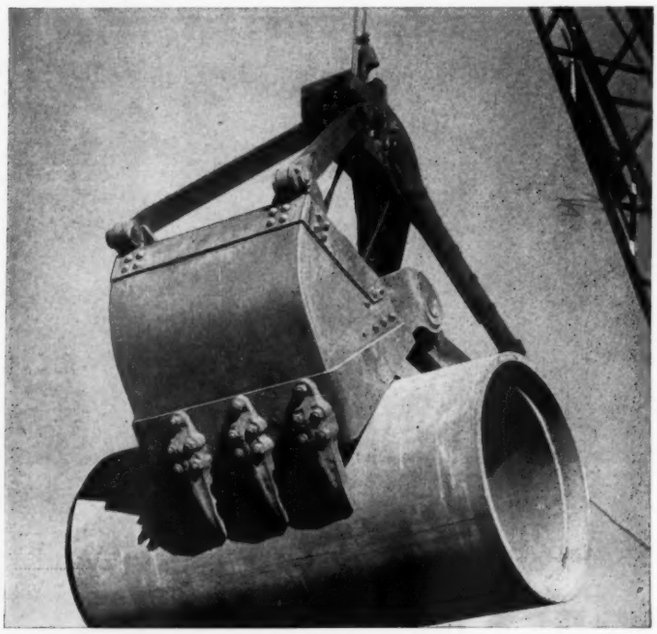
Special jobs

In addition to winter maintenance, division workmen also take on the job of developing tools to handle special jobs. One such tool is a tamper built to fill the Kansas requirement that the surface ahead of a finisher be tamped instead of vibrated. Koss' workmen shaped an 8-inch I-beam so that the 4-inch face of its lower flange fitted the crown of the roadway. The beam, attached to eccentrics on the front of the finisher, tamps at the rate of 8 to 12 blows per foot of travel.

Since Kansas requires earth cure on its concrete pavements, Koss personnel also developed a device for spreading the earth-curing material uniformly over the slab. This consists of a series of angles arranged like a road drag. As two Oliver 900 wheel tractors pull the machine along, it levels the curing material over the entire width of the pavement in a single pass. Water trucks equipped with pumps and nozzles spray the 24-foot width of the roadway from

"OUR ERIE STRAYER BUCKET IS THE MOST VERSATILE TOOL WE OWN"

● **States Edward J. Petrillo, President, Edward J. Petrillo, Inc.**



On the job photo shows an ERIE bucket's no-slip grip on concrete pipe being moved at Edward J. Petrillo, Inc. on the New York Thruway.

The change-over from clamshell bucket to grappling hook costs time and money—to say nothing of the extra man needed to work the hook. That's where an ERIE bucket's versatility pays extra dividends.

Like Mr. Petrillo, many satisfied owners use their ERIE not just to dig and load sand and gravel, but to move boulders, sewer pipe, steel girders, concrete slabs, logs, and old lumber.

An ERIE Strayer bucket is nimble, too. Its great power is perfectly balanced and easily controlled. Operators appreciate this feature—especially when digging in corners, along edges or loading hoppers in tight quarters.

These better buckets provide these *"wanted"* features:

1. Top closing power from block and tackle, plus lever arm construction, plus precision balancing.
2. Manganese steel teeth and high carbon steel lips that bite up full payloads of even toughest clay and gumbo.
3. Rigid, one-piece, welded head that shrugs off bumps and jars. No shimmy. No wobble.
4. Two-line, continuous reeving. Adds up to 50% to cable life. Less down-time for reeving.
5. Low head room for fast work in tight quarters; low center of gravity for easy positioning.

ERIE — BUCKETS THE WORLD OVER

For catalogs, write Dept. CE65 Cable Address: EXIMPORT

ERIE STRAYER CO.

3265 GEIST ROAD • ERIE, PENNSYLVANIA

LENKER AUTOMATIC LEVEL ROD

ELIMINATES ALL COMPUTATIONS IN TAKING ELEVATIONS

AWARDED **MEDAL OF MERIT FOR UTILITY**

— BY —
FRANKLIN INSTITUTE
— OF —
PHILADELPHIA

Adaptable for all the uses of an ordinary level rod.

Recommended by
ENGINEERS
CONTRACTORS
BUILDERS
ARCHITECTS

For
ACCURACY
SPEED
ECONOMY

Write for circular

LENKER MANUFACTURING CO.
599 Chestnut Street, Sunbury, Pa.

John Beuerlein, general superintendent for Koss Construction Co., leafs through a trade magazine in his office.

one shoulder to keep the curing earth moist.

Continuing maintenance

For the Koss organization, all work at the division is merely a continuation of maintenance done in the field. During the working season, operators, mechanics, and foreman carefully check the performance of each machine on the grading and paving spreads. Excessive oil consumption, unusual noises, vibration, visible wear, or failure to perform show up in accurate records kept all summer.

With these records, and their own personal knowledge of each machine, mechanics and machine operators decide in advance just what work is to be done on each piece of equipment during the winter. Needed parts are ordered well in advance so that they will be available at the shops when machines arrive. Overhauls are scheduled so that most of the work will be done in the time available.

To simplify maintenance operations and reduce the volume of spare parts needed, Koss has standardized on certain makes of equipment for a number of years. Caterpillar tractors, motor graders, and scrapers make up the bulk of the grading equipment. Though grading jobs exceeding 100,000 cubic yards of excavation are usually sublet to other contractors, the company normally handles all incidental grading, base work, and shouldering.

International trucks—used exclusively for many years by the company—normally do not get any overhaul for the first three years. After that, necessary overhauling is done each year. These trucks are kept about seven years, and in that time ordinarily get one set of new pistons and sleeves, and three valve jobs.

Recommendations for replacing machines no longer economical to repair or dependable enough to start a new season are passed on to the superintendent by maintenance men. The superintendent obtains quotations from local distributors on replacements for pieces he thinks should be traded or discarded. If approved by the home office, the machines are bought locally.

The general superintendent of the division is John B. Beuerlein, and he is assisted by Rankin Austin, paving superintendent. Grading superintendent Lloyd Arnote and grading equipment mechanic Dallas Fakes handle the repair of their own equipment. The foreman and mechanic for the paving spread, George Freidl and Harold Rappard, operate the paving-equipment repair shop. The truck shop is handled by Kenneth Poole and Elvin Evans, truck foreman and mechanic, respectively. Louis Gasprich, foreman of curing operations during the summer, is in charge of the paint shop.

When these men and the men in the shops finish their winter jobs, the machines—clean and in good working order—move out to start the new season's work. That is the time the company's winter maintenance investment begins to make returns.

THE END

Line of low-bed trailers

■ A line of heavy-duty trailers available in straight, drop, or double-drop-deck models is illustrated in a folder from Hughes Trailer Co., 1029 Brooke Blvd., Kenhorst, Reading, Pa.

Featured in the literature is the Hughes tandem axle designed for the low-bed equipment. This tandem has both longitudinal and crosswise full oscillation to maintain equal bearing on all tires. Designed so that it will not run out of line, the tandem has a rocking action that absorbs road roughness.

Other features discussed are continuous-welded trailer frames, and the use of extra-wide brake linings for quicker stops and better heat dissipation. The literature shows semitrailers and tandem semitrailers in the 15 to 60-ton range and two drawbar models rated at 10 and 15 tons. Also illustrated is a dolly available with different wheel combinations.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 76.

Cummer representative

The southeastern sales representative and engineer for the F. D. Cummer & Son Co., Cleveland, Ohio, is Donald G. Nichols. In addition to his home state of Georgia, Mr. Nichols will cover North and South Carolina, Florida, Alabama, and eastern Tennessee for the manufacturer of asphalt plants.

For Low Cost Concrete Protection and Curing . . .

SISALKRAFT!

Reenforced Waterproof Paper

Because it helps produce better concrete, waterproof Sisalkraft helps you build better buildings. Because it protects concrete from "traffic damage" and debris, scuff-proof Sisalkraft assures a better job. Light in weight and easy to handle, it rolls in place easily and can be removed just as easily with minimum cleanup. It performs all the jobs of protection and curing at one low material and labor cost.

Available in rolls 3 to 13½ feet wide and blankets any width up to 26½ feet. Write for samples, application information and nearest source of supply.

SISALKRAFT PRODUCTS

American SISALKRAFT Corporation
Dept. CE-6, Attleboro, Mass.

Please send Sisalkraft samples, application information and nearest source of supply.

Name .....
Company .....
Address .....
City ..... *Zone* ..... *State* .....

Chicago 6, Illinois • New York 17, N. Y. • San Francisco 5, California

This shop-made lubricating unit, using Lincoln pumps and reels which dispense lubricants directly from 400-pound drums, proved highly efficient and economical on a paving job at Newark Airport. Here the rig lubricates the cable-control unit of a tractor. ►

Case history

Downtime cut in half with lubricating unit

Keeping more than 50 pieces of heavy equipment in top working condition on an air-strip paving job at Newark Airport, Newark, N. J., was a special challenge for Union Building & Construction Corp., Passaic, N. J., especially since the machines were working in a hydraulically-placed sand fill. Many working parts had to be checked twice a day, while others were greased at least once a day.

The contractor designed and built in its shop a truck-mounted lubrication unit, using Lincoln component pumps and reels. The Lubrovan unit carried with its auxiliary equipment eight heavy-duty Lincoln pumps which dispensed from 400-pound drums to ten reels. Reels handled 65-foot lubricant volume hoses and one 100-foot air hose.

"We were able to cut our downtime for each unit in half," reports Richard Drukker, executive vice-president of the contracting firm. "The direct drum-to-bearing lubricating operation is dependable, positive, and efficient. Results are so satisfactory that we are building our second portable Lubrovan."

Brief description of aerial photogrammetry

■ A brief nontechnical explanation of aerial photogrammetry is found in a booklet from Abrams Aerial Survey Corp., Lansing 1, Mich. Describing the various steps in the photogrammetric process, the literature illustrates the special aircraft and cameras used in aerial photography and the instruments used in laboratory processing of the films.

Various types of maps and photographs can be produced by aerial surveys for specific uses. Typical of the services offered construction is the production of topographic maps made from aerial photographs. These are used in the construction of oil and gas pipelines, as an aid in purchasing highway right-of-ways, in highway grading and construction, and for engineering telephone and telegraph lines.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 34.

Booklet describes features of tractor shovels

■ One-cubic-yard Michigan 75 tractor shovels are described and illustrated in a new catalog offered by Clark Equipment Co., construction machinery division, Benton Harbor, Mich. This series offers three models including all-wheel-drive, front-wheel-drive, and rear-wheel-drive units.

The booklet emphasizes that the loader's power shift transmission reduces operator fatigue and speeds work cycles. It also explains why a torque converter cushions shock loads and increases digging power, and why planetary - wheel drive axles mean elimination of axle shaft breakage. Four cutaway drawings illustrate how principal components of the Michigan power train are built and how they work.

To obtain Catalog No. 7500-P write to the company, or use the Request Card at page 18. Circle No. 3.

Collins and Maxwell, Easton, Pa., lay Bethlehem fabricated bar mats on first continuously-reinforced road to be built in the East.

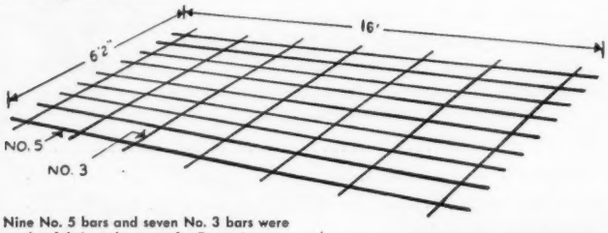
First Concrete Road in East with Continuous Reinforcement

The first concrete road in the East continuously reinforced with deformed bars was completed last fall at Bethlehem, Pa. Shop-fabricated bar mats, designed especially for this type of paving, were used in building the road.

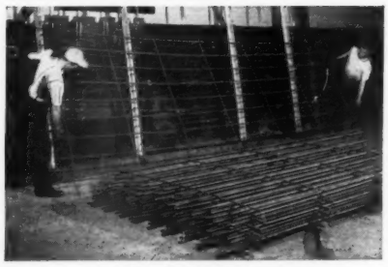
The western portion of Eaton Avenue, in Bethlehem, is a heavily-traveled stretch of road which connects the main traffic artery between Bethlehem and Allentown with U. S. Route 22, an east-west through route. Two motor cargo carriers have terminals located near Eaton Avenue, contributing largely to the heavy traffic load.

When resurfacing was necessary last year, it was decided to pave 1020 ft with an 8-in. pavement continuously reinforced with deformed bars.

No transverse contraction or expansion joints were used. Instead, specially-made mats of deformed bars were laid to form the continuous steel reinforcement. The mats, furnished by Bethlehem, weighed 180.9 lbs per 100 sq ft, and were placed after the first course of concrete was struck off just as ordinary mats are placed in reinforced concrete paving, without any necessity for accessories.



Nine No. 5 bars and seven No. 3 bars were used to fabricate bar mats for Eaton Avenue.



BAR FABRICATING SERVICE

Bethlehem can supply reinforcing bars for any type of construction project, including bar mats of any design and in any quantity. There are ten conveniently-located bar fabricating shops at your service: Boston, New York, Philadelphia, Johnstown, Pa., Baltimore, Buffalo, Detroit, Chicago, St. Paul and Seattle.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

DRILLING CONTRACTORS

Diamond and Shot Core Borings, Dry Sample Borings, Grout Holes and Pressure Grouting, Foundation Testing for Bridges, Dams and all Heavy Structures

Leading manufacturers, also, of High-Speed Diamond Drilling Machines and Complete Accessory Equipment, including all types of Diamond Drilling Bits.

Write for Catalog No. 320

SPRAGUE & HENWOOD, INC.
Dept. C, Scranton 2, Pa.

A welder uses an Arcair gouging torch to repair the cracked transmission case of a road grader. This $20 welding job saved the contractor, H. W. Stepler, Rocky River, Ohio, more than $1,000 in repairs and an extended period of downtime.

Case history

Gouging torch saves huge repair bill and downtime

Six months downtime and a repair bill of $1,200 faced Contractor H. W. Stepler of Rocky River, Ohio, after a sheared bolt shattered the cast-iron transmission case of his 14-ton grader. He needed the machine, though, to finish work on a grading project.

Ingenious use of an Arcair torch, combined with an old dc welder and supplied with air from a portable compressor, solved the problem. Stepler's maintenance crew gouged all the cracks in less than two hours—a job that would have taken several days by other methods. The resulting clean uniform v-groove provided good weld penetration, and after 10 months there is no sign of cracking.

The contractor figures the welding job, including labor, cost him $20—a saving of more than $1,000 and the extended downtime period.

High-flotation tires for construction machinery

■ Wide airplane-type tires offering greater flotation for trucks, trailers, graders, and other earthmoving equipment are illustrated in a catalog from Harmo Tire & Rubber Corp., 804 Hammond Bldg., Detroit 26, Mich. The literature lists tubes, wheels, etc.

Among construction machinery shown equipped with the high-flotation tires are an Austin-Western and an Adams grader, as well as scrapers, shovels, cranes, and tractors.

The company also offers a complete tire, tube, wheel, and stub-axle assembly which can be used to build house and machinery-moving dollies.

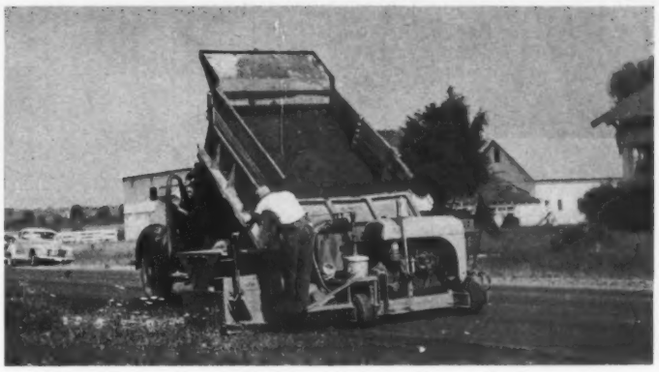
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 75.

Booklet lists sources of drainage products

■ By pin-pointing plants and sales offices on a coast-to-coast map, a new bulletin demonstrates the availability of Armco drainage products. The literature describes inventories of corrugated metal pipe, pipe-arch structures, guardrail, sheeting, bridge plank, and other products made by Armco.

Brief descriptions of these products and of the company's construction service available on subcontract are also included.

To obtain this literature write to Armco Drainage & Metal Products, Inc., Middletown, Ohio, or use the Request Card at page 18. Circle No. 25.



THE BURCH ROAD WIDENER and trench filler is designed to transfer controlled quantities of materials from a towing dump truck to the side of the road. Capable of spreading 400 to 500 tons of base stone in a day, the machine features a gasoline-engine-driven four-speed truck-type transmission. A hydraulic power drive maneuvers the unit when it is detached from the towing truck. For further information write to The Burch Corp., Crestline, Ohio, or use the Request Card at page 18. Circle No. 152.

No stick in the mud, this tractor!

Oliver OC-18 turns mud to profit: two-track power, wide torque engine pay-off!

Even in deep, sticky clay, this Oliver OC-18, excavating on a superhighway, kept right on working—piling up profits in spite of the gummy ground condition.

Oliver's husky, 133 drawbar h.p. engine has what it takes to pull through tough going. An exceptionally wide torque span actually steps up lugging power as the engine slows under load. In fact, the OC-18 can deliver 34,000 maximum drawbar pounds' pull in first gear at 1½ miles per hour!

Combined with this power is the OC-18's extra-high clearance and exclusive steering that keep power on both tracks at all times. You can work in wet, muddy ground...over rocks and obstructions...turn out more work every day in any weather!

Try the OC-18 yourself. Learn its power and traction advantages as well as its easy maneuverability and effortless, finger-tip air steering. See or call your Oliver Industrial Distributor for a demonstration.

The Oliver OC-18 is available with cable or hydraulically operated bulldozers.

THE OLIVER CORPORATION
400 W. Madison Street, Chicago 6, Illinois

OLIVER CORPORATION

a complete line of industrial wheel and crawler tractors

HUNT PROCESS
CONCRETE CURING COMPOUNDS
NOW AVAILABLE IN SOUTHEAST
Write for complete information
HUNT PROCESS CORP., SOUTHERN
RIDGELAND, MISSISSIPPI
Western Factory & Main Office
HUNT PROCESS COMPANY, INC.
7012 Stanford Ave., Los Angeles 1, Calif.

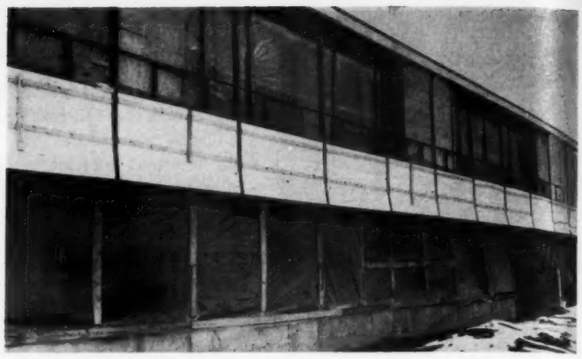
MIX and PAVE—
all in ONE operation!

THE BURCH MODEL 12 PAVER and RESURFACER

Write Dept. CE for Literature.

Mixes, spreads, and levels bituminous material 10 to 12 feet wide in ONE pass. Material is rolled and mixed FOUR times. Easily adjusted to spread uniform thicknesses over varying contours. Wheel base is 22' 10". The Burch Paver is tractor-pulled — but its operation is hydraulically controlled, with power supplied by a self-contained gasoline engine.

The BURCH Corporation
MANUFACTURERS OF EQUIPMENT FOR CONSTRUCTION AND MAINTENANCE OF ROADS AND STREETS
CRESTLINE, OHIO, U.S.A.



Held in place over the scaffolding by boards and nails, Visqueen film on this school addition project in New Canaan, Conn., protects workers from wind, snow, and cold while bricklaying and other construction work goes on inside. The protective film also saves on artificial lighting by letting daylight into the building.

Case history

Protective film permits work in severest weather

Work on a large addition to Sharon Center School, Sharon, Conn., was carried on throughout last winter with the aid of special film which protected the workers and materials from the elements.

John C. Smith, Inc., New Canaan, Conn., contractor, began work on the project in December of 1954. Nearly 5,000 square feet of Visqueen, a Bakelite polyethylene film, was laid over the conventional wood scaffolding and held in place by boards and nails. Blocking wind up to 65 miles per hour in velocity, the film held in heat from gasoline-burning hot air heaters and permitted brick to be laid even when it was snowing outside. Being translucent, the film permitted daylight to enter the building and did away with the necessity for artificial lighting.

Later, the same film was fastened to window frames to protect workers from cold spring blasts until window panes could be installed.

The contractor on this job found that the use of this protective film permitted work to go on during more than half the days it would ordinarily have been halted by bad weather.

Manual on wire cloth for screening equipment

■ Several types of wire cloth for vibrating-screen equipment handling rock, sand, gravel, slag, and other aggregates are described in a manual from Hoyt Wire Cloth Co., Abraso St., off Manheim Pike, Lancaster, Pa.

The booklet covers two types of particular interest to the construction field. Supertough, made from a premium-price oil-tempered steel wire, provides a screen that is extremely resistant to abrasion. Abraso, made from hard-drawn high-carbon spring wire, combines abrasion resistant with fatigue resistance. The line also includes a stainless-steel wire cloth.

The manual contains ordering information and practical recommendations on choosing screens.

To obtain this literature write to the company, or use the Request Card at page 18, Circle No. 69.

CHARLES R. COX

Portrait by Fabian Bachrach

"I urge every executive..."

"I know of no better method for each citizen to protect the American way of life than by building his own economic security and by helping his Government to keep financially sound. Both these results can be accomplished through the Payroll Savings Plan. I urge every executive in the nation to give this Plan his active and vigorous support."

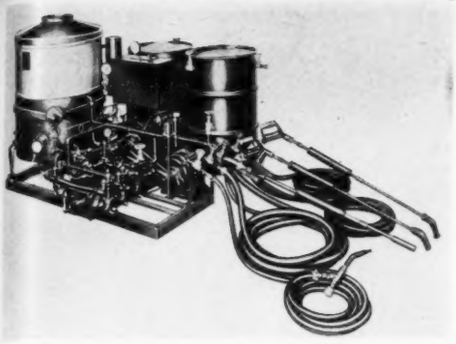
CHARLES R. COX, *President, Kennecott Copper Corporation*

With the active cooperation of Mr. Cox, Kennecott conducted a person-to-person canvass which put a Payroll Savings Application in the hands of *every* one of Kennecott's 20,000 employees. The men and women of Kennecott did the rest. Country-wide participation in Kennecott's Payroll Plan rose from 24% to 52%.

Your State Director, U. S. Treasury Department, is ready to help you install a Payroll Savings Plan, or show you how to build participation in an existing Plan through a simple person-to-person canvass. Write today to Savings Bonds Division, U. S. Treasury Department, Washington, D. C.

The United States Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

CONTRACTORS AND ENGINEERS



This Clayton machine delivers 600 gph for steam-cleaning and 500 gph for rinsing.

Steam cleaner offers capacity of 600 gph

■ A steam cleaner for large cleaning jobs, used for many years by the armed forces, is now available for industrial use according to Clayton Mfg. Co., Box 550, El Monte, Calif. The versatile machine delivers 600 gph of vapor cleaning solution with a single nozzle, 300 gph through each of two nozzles, and 200 gph out of each of three nozzles. A fourth nozzle on the machine is for rinsing and has a capacity of 500 gph for hot or cold water delivered at 300 psi.

The machine is designed so that it may be operated at 400 or 200 gph as well as at the maximum capacity of 600 gph. Gas and oil-fired models are available.

For further information write to the company, or use the Request Card at page 18. Circle No. 102.

All-steel pile shoes

■ Pile shoes that make driving of wood piles easier and faster, while preventing brooming, are described in a leaflet from American Pulley Co., 4200 Wissahickon Ave., Philadelphia 29, Pa.

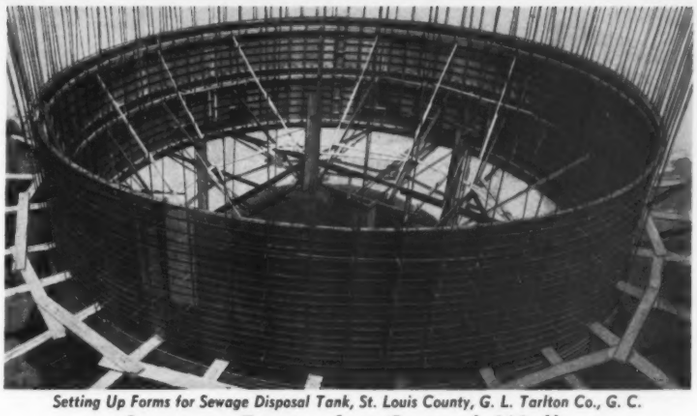
The American all-steel pile shoes fit over the end of the previously-sharpened pile. Nail holes are provided, and bending holes permit a tailor-made fit to the sides of the pile.

The pile shoes are constructed of ¼-inch steel plates, while the pointed tip is made of solid steel bar stock turned to a sharp point and welded into the shoe. Three sizes available fit piles from 6 to 14 inches in diameter.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 44.

Allis-Chalmers appoints

William A. Yost, Jr., has been appointed to the position of vice president in charge of staff operations of the Allis-Chalmers Mfg. Co., Milwaukee, Wis. Joining the company in 1943 as manager of the marine division, steam turbine department, Mr. Yost advanced to assistant manager and then manager of that department. Since September, 1951, he has been vice president of the general machinery division.



Setting Up Forms for Sewage Disposal Tank, St. Louis County, G. L. Tarlton Co., G. C.

Symons Forms for Curved Walls

Symons Rib panels are used with V-shaped fillers at each joint. Wedge-bolts secure the 3 pieces together and also hold the ties in place. Curved walers or 1" x 6" flat walers may be used for alignment.

Contractors report savings of $5,000.00 on forming costs of Sewage Disposal Plants. Symons offers a complete engineering service. Send plans for your next job and get complete layout and cost sheet—no obligation. *Symons Clamp & Mfg. Co., 4251-F5 Diversey, Chicago 39.*

Yes, MM Engines are built and equipped to order

FURNISHED TO YOUR SPECIFICATIONS IN LOTS OF 1 OR 100!

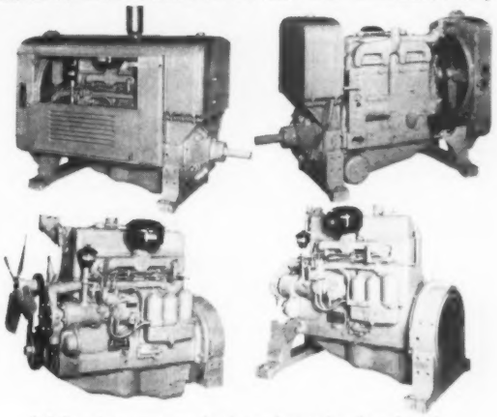
You get power adaption that fits your specifications more readily with Minneapolis-Moline engines. Why MM? Because, as an independent engine builder, no single sales outlet dictates MM engine design—and MM works in such a big variety of power applications.

To meet a wide range of basic requirements MM engines have large displacement for high torque at moderate rpm. Extra high compression and high turbulence combustion combined with high volumetric efficiency provide outstanding performance.

For these reasons MM units are ready to go when equipped with specified operating accessories. You eliminate major auxiliary unit purchases to adapt engine characteristics to meet momentary high load demands. Further long run benefits are low fuel consumption and low maintenance that total up to low cost production.

Every-day experience in supplying a wide range of unit requirements enables MM to maintain customary high quality in single or small lot quantities at reasonable cost.

A high degree of standardization results in high production parts that provide precision fits and permit MM to schedule parts for special units in large quantity, assuring early delivery and customer service.



MM engines are completely engineered and equipped for gasoline, LP gas, natural gas, or distillate fuels. Sizes range from 206 cu. in. portable units to 1600 cu. in. stationary engines and are available for fan to flywheel application or completely enclosed leg mounted installations. MM also builds a line of industrial Diesel power units: Sizes—283-, 425-, 605 cu. in.

Standard equipment includes vacuum crankcase ventilation, thermostat controlled bypass cooling, packaged water pump, built in variable speed governors, enclosed gear driven oil pump, and oversize full-flow oil filters (shunt-type filters are provided exclusive on MM Thermo-Clad units).

Send details on your application for examples of MM built-to-order packages for original or replacement needs. Engineering service available for pumps, hoists, crushers, generators, shovels, ditchers, cranes, compressors, feed mills, saw mills, planing mills and similar installations. When you want dependable performance year after year from your engine, you want an MM Industrial Power Unit.

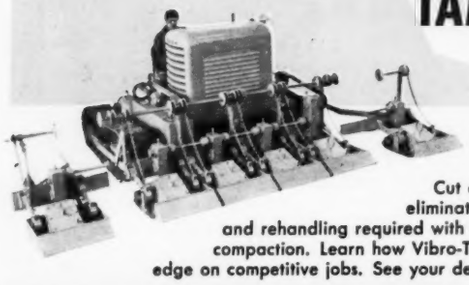
INDUSTRIAL DIVISION

MINNEAPOLIS-MOLINE MINNEAPOLIS 1, MINNESOTA

YOURS! single lift compaction!

ADJUSTABLE! WIDE or NARROW COURSES from 8'-6" to 13'-2"

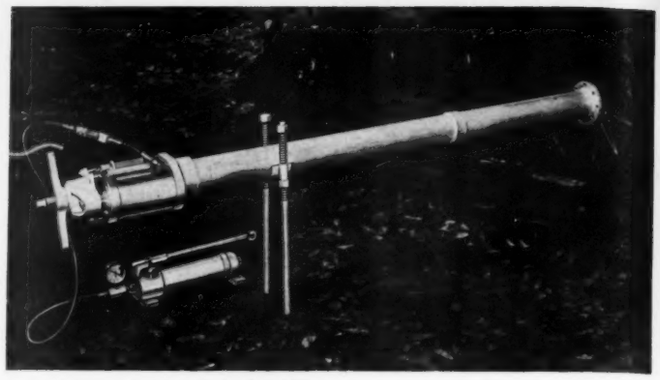
VIBRO TAMPER



MACADAM CONCRETE

Cut compaction time and eliminate cost of stock-piling and rehandling required with old-style multiple-lift compaction. Learn how Vibro-Tamper gives you the edge on competitive jobs. See your dealer, or write today!

THE INTERNATIONAL VIBRATION COMPANY
16702 WATERLOO ROAD • PHONE: IV. 6-0680 • CLEVELAND 10, OHIO



After this crawler tractor broke down on a clearing job, the contractor used an Owatonna International 100-ton pivot shaft puller to remove the old shaft in an hour and a half. This operation probably saved him expensive downtime and considerable hand labor to break the shaft loose.

Case history

Hydraulic puller speeds repair operation in field

A Mankato, Minn., contractor avoided many hours—perhaps days—of costly downtime and considerable labor when he used an OTC pulling and installing set in installing a new pivot shaft on his crawler tractor during a land-clearing job.

The machine broke down on a project about 25 miles from the nearest town. He decided to tear down the machine and install a new pivot shaft, and accordingly put through a call to the OTC representative in the area. In short order an OTC International pivot-shaft pulling and installing set using a Power-Twin 100-ton hydraulic ram was at the scene, and the old pivot shaft was pulled in an hour and 30 minutes.

Since the job required 96 tons of hydraulic pulling power, it is likely the contractor would have faced hours and perhaps days of heating, sledging, and beating before the shaft could have been broken loose by hand labor. The portable puller delivered the necessary power quickly and saved both time and maintenance expense.

Both the portability of the Power-Twin ram and its adaptability in the field are factors which in this case saved the contractor repair costs and man-hours.

Forward-mounted hoists increase dump-body load

■ The Anthony Teleramic telescopic hoists and dump bodies are illustrated in a folder available on request. The hoists feature cylinders with truss rings that reinforce the ends of each cylinder tube to prevent flaring. The rings are also used to adjust the packing.

The literature emphasizes that the extreme forward location and point-of-lift of the Teleramic hoists shift the hoist weight to the front, increasing the legal payload by as much as 1,000 pounds.

The hoists are available in models of up to 25-ton capacity for all trucks including straight and 6-wheelers. Also shown in the literature is a complete line of standard and special dump bodies.

To obtain this literature write to Anthony Co., Streator, Ill., or use the Request Card at page 18. Circle No. 35.

We proudly open our ATLANTA OFFICE

IN ATLANTA
805 PEACHTREE STREET
TELEPHONE ELgin 5532

A SPECIALIZED SERVICE . . . SPECIALIZING IN SERVICE

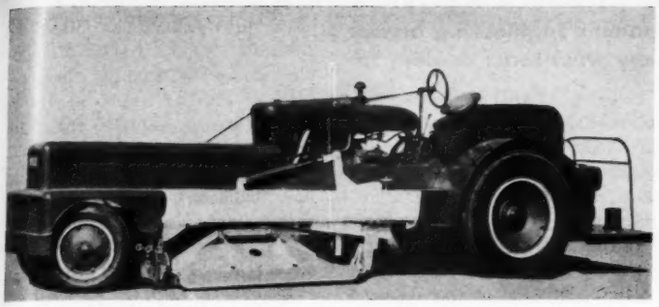
Now you can count on even better local service for the growing needs of Southeastern Industry as we open our sixth district office and warehouse. In charge will be men who know the needs of this territory, through years of service in the area. If you use any of our specialty products pictured above, we know you will welcome the usual Foster dependability and the convenience of 'single-source' buying.

The 52-year old Foster company is the nation's foremost warehouser of New and Relaying Rails, the largest specialist in Rental Steel-Sheet Piling, and one of the country's most dependable sources for Pipe, in all sizes—from warehouse and mill.

If you are not yet a Foster customer, please try us for service. Write for our helpful catalogs—yours for the asking.

L.B. FOSTER CO.

PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4 • HOUSTON 2 • LOS ANGELES 5 • ATLANTA



The new Monatco heater-planer has the advantage of intense heat controlled so that asphalt will not be damaged. The machine is reported to operate without creating smoke.

Improved heater-planer renews asphalt paving

■ A new asphalt heater-planer is equipped to generate intense heat but does not burn the asphalt, according to the manufacturer, Monatco Mfg. Co., 1401 Woodland, Kansas City, Mo. Furthermore, the new Monatco machine is reported to work without creating smoke.

The heater-planer simplifies the maintenance of asphalt streets, highways, roads, and airport runways. Thoroughly heating the asphalt from top to bottom, the Monatco unit softens it and then planes off all irregularities. This is accomplished in one operation, with all ruts filled and cracks sealed with preheated material.

Temperature under the heating hood is held uniform and constant, regardless of how fast the machine may be moving, by a separate motor that operates the blower and fuel pump. Close control over the air supply eliminates the possibility of incinerating the asphalt or damaging it by the heat. It also allows the temperature to be held several hundred degrees higher than ordinarily possible. The machine's extra heat allows more thorough softening and conditioning of the asphalt before the planing blade reaches it.

The planing blade, arranged in two sections to windrow in the middle, cuts up to one inch deep and 78 inches wide. The burner uses standard No. 2 fuel oil. Only one operator is required.

For further information write to the company, or use the Request Card at page 18. Circle No. 148.

Marlow Pump promotion

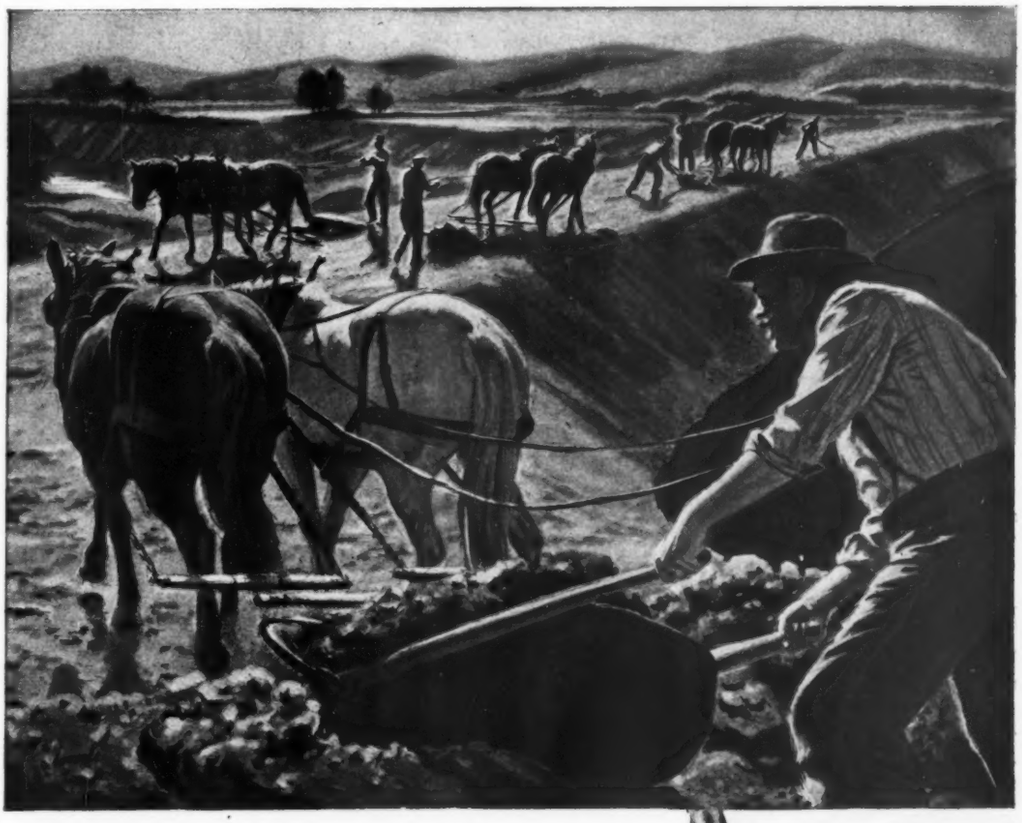
John L. North has been made manager of national accounts for the Marlow Pump Division of Bell & Gossett Co., Ridgewood, N. J. With the sales department at Marlow for more than two years, Mr. North will be responsible for company accounts not limited to any one specific territory.

New small trencher

■ Newest addition to the Ditch-Witch trencher line is the rubber-tire-mounted Model LD featuring a variable speed transmission. Capable of various speeds, this self-contained unit is suitable for any number of light trenching jobs. It is especially recommended by the manufacturer for such jobs as trenching service lines for small-diameter pipe and electric cable and for digging shallow footings.

Controls are conveniently located so that the trencher can be operated from the seat. The standard 6-inch-wide bucket line is hydraulically controlled and digs to a depth of 36 inches. The bucket line is enclosed, self-cleaning, and has replaceable tool-steel teeth. Spoils can be deposited on either side of the trench with a reversible spoils chute.

For further information write to The Charles Machine Works, Perry, Okla., or use the Request Card at page 18. Circle No. 125.



no match for MUSCLES OF STEEL

America's towering dams stand as mighty monuments to the efficiency of modern excavating and earth-moving equipment. On these machines, *muscles of steel*—rugged wire rope—handle with ease and dispatch the tasks that once were back-breaking for man and beast.

Wherever big construction projects are under way, you'll find Wickwire Rope at work—helping to do a better, faster and more efficient job.

Same way—in the mines and quarries ...in the oil fields and logging camps... with the fishing fleets and in materials handling. Here, too, Wickwire Rope has won outstanding preference because of its proved durability and demonstrated reliability and economy.

every industry benefits from wire rope

WICKWIRE ROPE

CF&I PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

WICKWIRE ROPE — A CF&I PRODUCT

THE COLORADO FUEL AND IRON CORPORATION—Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
PACIFIC COAST DIVISION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New Orleans • New York • Philadelphia

2696

WYCO 2 H.P. UNIVERSAL ELECTRIC MOTOR VIBRATOR

Place Concrete faster! Light - Powerful

WRITE FOR CATALOG WYCO GASOLINE AND ELECTRIC VIBRATORS

$297.00 UP FOR CHICAGO

WYZENBEEK & STAFF, INC

DISTRIBUTOR DOINGS

Huber-Warco distributors

A number of new distributors for its line of tandem rollers, three-wheel rollers, and graders have been appointed by Huber-Warco Co., Marion, Ohio.

Equipment Distributors, Inc., 3708 Venable Ave., Charleston, W. Va.; Road Machinery Inc., Devon, Pa.; O. S. Stapley Co., Phoenix, Ariz.; and Gledhill Road Machinery Co., Galion, Ohio, will distribute Huber-Warco equipment in their respective areas. The latter company also manufactures a number of road machinery products including snowplows, drawn graders, weed-control units, and snow and ice-control equipment.

Other distributors appointed by the company are R. G. Moeller Co., 14415 Meyers Road, Detroit, Mich.; Caird Engineering Works, Helena, Mont.; The Sawtooth Co., 1115 Grove St., Boise, Idaho; and The Bode-Finn Co., 2650 Spring Grove Ave., Cincinnati, Ohio.

Dealer for LeTourneau

A new distributor of LeTourneau electric hoists and jib cranes in the southern California area is Stanley E. Morris Co., Los Angeles. The material-handling equipment firm is operated by Stanley E. Morris and Earl F. Haverstock. James L. Bailey is sales manager for the company, which will carry the equipment line manufactured by R. G. LeTourneau, Inc., Longview, Texas.

Pioneer Engineering names new west coast dealer

Cook Bros. Equipment Co., Los Angeles and Oakland, Calif., has been made a distributor for Pioneer Engineering Works, Inc., Minneapolis, Minn., a subsidiary of Poor & Co., Chicago.

The dealer, with offices at 3334 San Fernando Road in Los Angeles and 416 E. Eighth St., in Oakland, will handle the complete line of Pioneer Continuflo equipment in California and southeastern Nevada.

The firm, which manufactures Cook Bros. truck equipment, also handles construction machinery manufactured by S. C. Johnson, American Hoist & Derrick, and Shield-Bantam.

Modern headquarters erected by I-H dealer

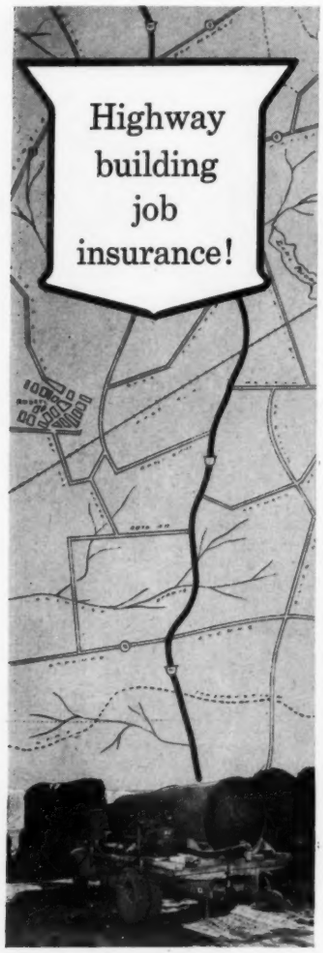
The Illinois and eastern Missouri dealer for International Harvester Co.'s industrial power line, Missouri-Illinois Tractor & Equipment Co., has moved into its new quarters on Lindberg Boulevard in Hazelwood, Mo. The modern office, sales, and service building with 28,000 square feet of space, has a brick exterior and an open canopied display area.

While this distributor has been modernizing its facilities, another dealer in Wyoming has joined the I-H roster. Keremi Tractor & Equipment Co., 902 W. 22nd St., Cheyenne, together with its branch at 414 E. Elm St., Casper, will cover the entire state, handling the Chicago, Ill., manufacturer's line of crawler tractors, bulldozers, scrapers, loaders, shovels, and allied products.

Manitowoc sales abroad

Foreign sales of the power cranes and shovels made by Manitowoc Engineering Corp., Manitowoc, Wis., are now being handled by several new dealers.

Distribution in Europe and the Orient is being done by Dalton-Cooper, Inc., 200 W. 34th St., New York, N. Y. Two Canadian dealers are

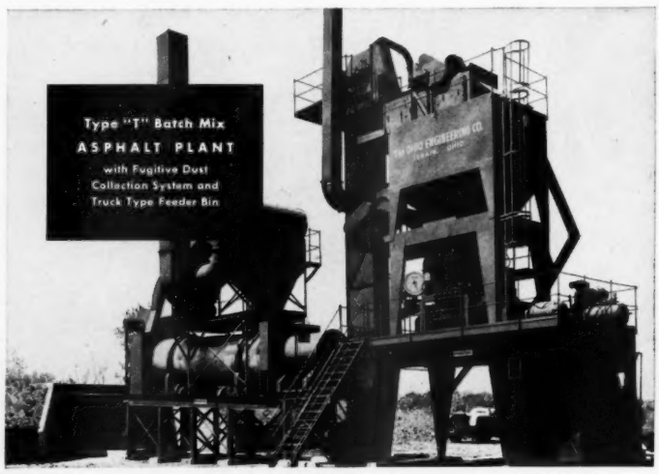


Marlow Pumps
keep 'em rolling

It costs the S&M Construction Company of Providence, R. I., *$500 per hour* to tie up this two-cubic-yard batch paver. *That's* why there's a dependable Marlow Engine-Driven, Self-Priming Centrifugal Pump mounted on this tank truck. This small pump assures a steady supply of water at 30 p.s.i. to feed the mixer tank . . . without interruptions or break-downs.

For complete information on Marlow AGC rated pumps, see your Marlow dealer today or write for Bulletin C-04.

MARLOW PUMPS
Ridgewood, New Jersey
Division of Bell & Gossett Company



4 DIFFERENT CAPACITIES — CHOICE OF POWER

A FEW OF MANY TYPE "T" FEATURES

- New structural design
- All-welded plate construction
- New type Deister flat screen
- Internal self-contained overflows
- Self-contained dust bin
- Individual trunnion roll drive on dryer
- Pneumatic controls

(The Fugitive Dust System shown on above plant is optional equipment)

H & B Type "T" Batch Mix Asphalt Plants are available in four sizes to meet your exact requirements: T-25, up to 60 tons per hour; T-40, up to 110 tons per hour; T-50, up to 135 tons per hour; and T-60, up to 180 tons per hour. Any of these sizes may be had with all units driven by individual electric motors (completely factory wired); with gasoline or Diesel engines on the main units and electric drives on the smaller units; or with gasoline or Diesel drives throughout.

Special engineering service is available for planning special installations when standard size plants will not meet the requirements of the job.

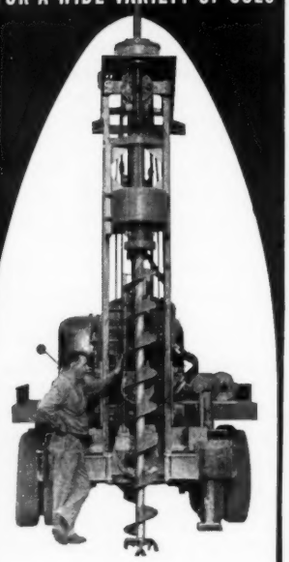
Write for new Bulletin T-55

HETHERINGTON & BERNER INC., *Engineers — Manufacturers*
731 Kentucky Avenue **Indianapolis 7, Indiana**

NEW HEAVY-DUTY McCARTHY DRILL

HEAVY RUGGED POWERFUL

FOR A WIDE VARIETY OF USES



This new heavy-duty drill, Model 106-24, is used for blast hole drilling, general exploration, foundation drilling, dewatering operations, deep post holes, etc., and is a companion drill to McCarthy 106-8 using 8" dia. augers and smaller. Has high-speed power take-off—one speed for rock, one speed for other earth formations. Outside power take-off for large augers at one-half speed. Hydraulically operated throttle valve.

AUGER DIAMETER		DEPTH OF BORE
20 INCHES		30 FEET
16 "		40-60 "
12 "		60-80 "
8 "	and under	100 "

8" diameter auger bores through shale and sandrock. Larger diameter auger bores through shale and hardpan formations. The choice of contractors where the going is tough.

For complete information contact The Salem Tool Co.

THE SALEM TOOL CO.
806 S. ELLSWORTH AVE.
SALEM, OHIO · U. S. A.

Compressed Air Equipment, Ltd., 328 DuPont St., Toronto, and Automotive Products Co., Ltd., 3282 Wellington St., Montreal. The former company covers Ontario, and the latter, Quebec.

In Mexico, the representative for Manitowoc is Union Commercial Hispano Americana, S. A., Ezequiel Montes 102.

Cummins dealer in South

A new corporation, Cummins Carolina Diesel, Inc., Charlotte, N. C. has been made a dealer for Cummins Engine Co., Inc., Columbus, Ind. The firm, which has a territory including South Carolina and the southwestern part of North Carolina, is headed by Edward L. Story.

LeTourneau-Westinghouse appoints Ohio dealer

Reddco Equipment Co., Bedford, Ohio, is a new dealer covering northern Ohio for LeTourneau-Westinghouse Co., Peoria, Ill. The dealer, now operating from an office at 550 Krick Road, is constructing a new home office in Northfield, Ohio.

Officers of the company, formerly associated with the Torcon Corp., are Henry A. Betts, president and Thomas S. Bednar, vice president. Francis L. Kuhn is service manager.

Cleaver-Brooks dealership

Among the new dealers handling products manufactured by Cleaver-Brooks Co., Milwaukee, Wis., is Delval Equipment Corp., Philadelphia, Pa. Located at 4610 N. 15th St., Philadelphia, the firm will cover the state of Delaware, eastern Maryland, southern New Jersey, and eastern Pennsylvania. Cleaver-Brooks products include oil and gas-fired stationary boilers, mobile steam boilers, and industrial gas and oil burners.

Three dealers named by Maginniss Power Tool

Three distributors have been named to handle equipment manufactured by the Maginniss Power Tool Co., Mansfield, Ohio.

Fehrs Tractor and Equipment Co., 1809 Cumming St., Omaha, will cover the state of Nebraska, and E. F. Craven Co., 515 S. Eugene St., Greensboro, will handle sales in North Carolina. Eastern Tennessee will be served by Wilson-Weesner-Wilkinson Co., Knoxville, with headquarters at 202 W. Morelia Ave. Its Nashville branch will continue to cover central Tennessee.

All three companies will handle the complete Maginniss Power Tool Line, including Hi-Lectric concrete vibrators, generators, and related equipment.

Smith Engineering outlet

A new Texas distributor, The Roy Klossner Co., San Antonio, has been appointed to handle Telsmith equipment made by The Smith Engineering Works of Milwaukee, Wis. The firm will cover the south Texas area.

The dealer's service and parts departments are located at the main office, Euclid at Grayson, in San Antonio.

Hyster dealer expands

Freeman & Sons, Inc., Miami, Fla., dealer for Hyster Co., Portland, Oreg., has opened a new branch at Lakeland to cover its expanded territory. The company now represents Hyster in the entire state, excluding the panhandle west of the Apalachicola River. The Lakeland outlet is located at 1310 New Tampa Highway.

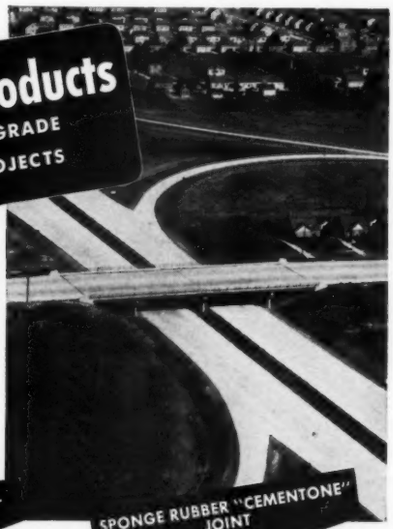
George Bannister, formerly an export representative with Hyster, has been appointed to the Freeman staff.

Lima names two dealers

Two new distributors of Lima shovels, cranes, draglines, and pull shovels and of the Austin-Western

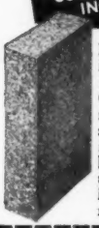
(Concluded on next page)

Servicised Products
for BRIDGE and GRADE SEPARATION PROJECTS



Concrete bridge and grade separation structures are subject to unusual amounts of movement due to temperature change, traffic stresses, and settling simply because they have to be built "up in the air." The following are a few of the Servicised Products which you can specify or use which will take this movement and yet keep your job sealed against moisture and attractive in appearance.

CORK and SELF-EXPANDING CORK JOINT FILLERS



Both types are non-extruding resilient and compressible, inconspicuous in color. Cork recovers 95% original thickness after compression; Self-Expanding Cork is treated to expand 50% beyond original thickness to keep joint filled regardless of contraction movement.

SPONGE RUBBER "CEMENTONE" JOINT FILLER

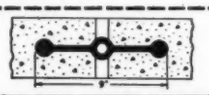
Fully resilient high quality blown sponge rubber "Cementone" blends with color of concrete. Uniform thickness and density. Available in varying degrees of compressibility to meet your requirements.

MOLDED PARA-PLASTIC

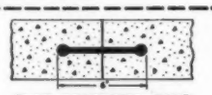
For sealing keyed construction or contraction joints in vertical walls. Maintains bond with concrete at temperatures down to sub-zero. Simple installation insures a resilient, moisture-tight seal of the joint.

PARA-LATERAL STRIP

For sealing backfilled vertical construction or expansion joints in retaining walls, abutments, wing walls, foundations, tunnels, etc. against seepage to exposed side. Para-Plastic facing of strip insures permanent adhesion to concrete.



HOLLOW BULB RUBBER WATERSTOP
For permanent, watertight seals in expansion joints where a high degree of expansion and contraction is expected.



FLAT DUMBBELL TYPE
Flexible, elastic rubber with very high tensile strength for sealing construction joints.

SPLIT DUMBELL TYPE

Faster to install . . . eliminates split forms (1) Nail to bulkhead in form of a "T" (2) Section is poured and bulkhead stripped. (3) Divided section is joined together by stapling or with rubber cement.

ASPHALT PLANK
Servicised Mineral Surfaced or Standard Plank is resilient, quiet, long-wearing. Widely used on bridges, underpasses and grade separations as a wearing surface or as a waterproofing protection course.

Write for details on these Servicised Products and your copy of the complete catalog.

SERVICISED PRODUCTS CORPORATION
6051 WEST 65th STREET • CHICAGO 38, ILLINOIS

LIFT OBJECTS QUICKLY—SAFELY...

ANY SHAPE OR SIZE!

with **DOWNS SAFETY GRABS** for Cranes and Hoists

PILE BAND PULLER

Now you can tailor your lifting equipment to "fit" any shape or size materials to be moved with Downs Safety Grabs. No matter what your hoists are handling — pipe, rails, drums, plate or structural steel, stone, timber, boxes or odd-shaped objects of any size — there's a Downs Safety Grab designed for the job.

RIPPING HOOK

Downs Safety Grabs give you faster, easier lifting . . . and they're safety-engineered to provide a wider safety factor than listed capacity ratings. They can't let go until you release the load — real protection for workers that improves morale.

BEAM TONGS

Write for FREE illustrated catalog 2008-B for complete information on every model — today!

PILE POINT & BAND

PILE PULLER

DOWNS "THE GRIP that NEVER GIVES"

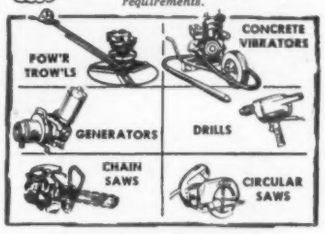
DOWNS CRANE & HOIST CO.
MECHANICAL ENGINEERS
540 W. VERNON AVE. • LOS ANGELES 37, CALIF.

Mall

CUSTOM-BUILT TOOLS FOR YOUR CONSTRUCTION JOB...

GASOLINE
ELECTRICITY
AIR

What's your most convenient power source? MALL offers you the world's biggest assortment of GAS ENGINE, ELECTRIC, and PNEUMATIC power tools—a size, a style, a power head to EXACTLY fit *your special requirements.*



HERE'S HOW TO GET A FREE DEMONSTRATION

Just pick up your phone and call your MALL Dealer or nearby MALL office. (36 key branches coast to coast) Tell 'em which tools interest you most. Right now—mail this coupon for additional information.

MALL TOOL CO. PORTABLE POWER TOOLS Gasoline · Electric · Air
7743 South Chicago Ave., Chicago 19, Illinois

Send me literature on MALL construction tools.

Name_____
Company_____
Address_____

CU-171

(Continued from preceding page)

line of crushing equipment have been named by the Construction Equipment Division of Baldwin-Lima-Hamilton Corp., Lima, Ohio.

Covering the central and eastern parts of Iowa is Hawkeye Machinery Co., Inc., 1225 Walnut St., Des Moines. Bert Smith Road Machinery Co., Inc., 321 W. Chestnut St., Enid, Okla., will serve the entire state of Oklahoma, with the exception of six counties in the extreme eastern part of the state.

Hensley appoints dealer

Keremi Tractor & Equipment Co., which maintains facilities in Cheyenne and Casper, Wyo., has been made an exclusive dealer by Hensley Equipment Co., Inc., Oakland, Calif., in Wyoming and western Nebraska.

The dealer will handle dozer and scraper rippers, bottom-track rollers, cutting edges, scarifier parts, and other products made by Hensley.

Galion distributor

V. W. Weeks & Sons, Glens Falls, Ohio, is a newly appointed distributor for the dump bodies and hydraulic hoists manufactured by The Galion Allsteel Body Co., Galion, Ohio. The firm will cover east-central New York.

Warner & Swasey division names three distributors

Dealers in New York, Arizona, and Atlanta have been appointed to handle products manufactured by the Gradall Division of The Warner & Swasey Co., Cleveland, Ohio. The New York dealer, Dow & Co., Inc., 1820 Elmwood Ave., Buffalo, will cover the western part of New York State.

State Tractor & Equipment Co., Phoenix, will handle sales in the state of Arizona and Stith Equipment Co., Atlanta, will cover Georgia.

Bucyrus-Erie distributor

Euclid-Memphis Sales, Inc., Memphis, Tenn., now offers sales and service on Bucyrus-Erie excavators and cranes in western Tennessee, northern Mississippi, and northeastern Arkansas. The dealer, located at 185 E. Butler Ave., will also handle the truck-mounted all-hydraulic Hydrocrane, Hydrohoe, and Red Arch dragline buckets manufactured by Bucyrus-Erie Co., South Milwaukee, Wis.

Dealers—This is your department, so send in news of your organization—all about new plants, new lines, and staff changes. We'll be glad to receive photographs too.

Centrifugal pumps offered with aluminum frames

■ New lightweight centrifugal pumps made with frames of aluminum alloy have been announced by Rice Pump & Machine Co., Belgium, Wis. Capacities range from 5,500 gph through 18,000 gph. Powered by four-cycle air-cooled engines, the pumps are also available in cast-iron construction.

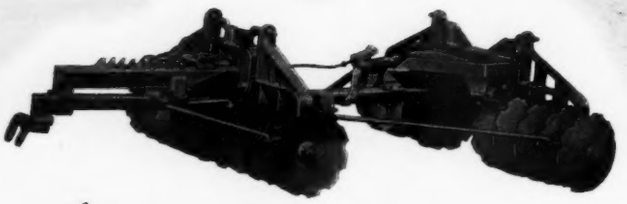
Equipped with non-clogging impellers, the pumps can handle liquids with a high percentage of solids. Other features are an easily-replaced, lubricated shaft seal, and replaceable pump liners.

The pumps are available with wheelbarrow mounting, or they may be had on two pneumatic-tire wheels, base-mounted for belt power, or pedestal mounted.

For further information write to the company, or use the Request Card at page 18. Circle No. 95.

Remember the Blood Bank Today!

...for real BIG SAVINGS in Money, Labor and Down Time—it's the AMCO Brushmaster



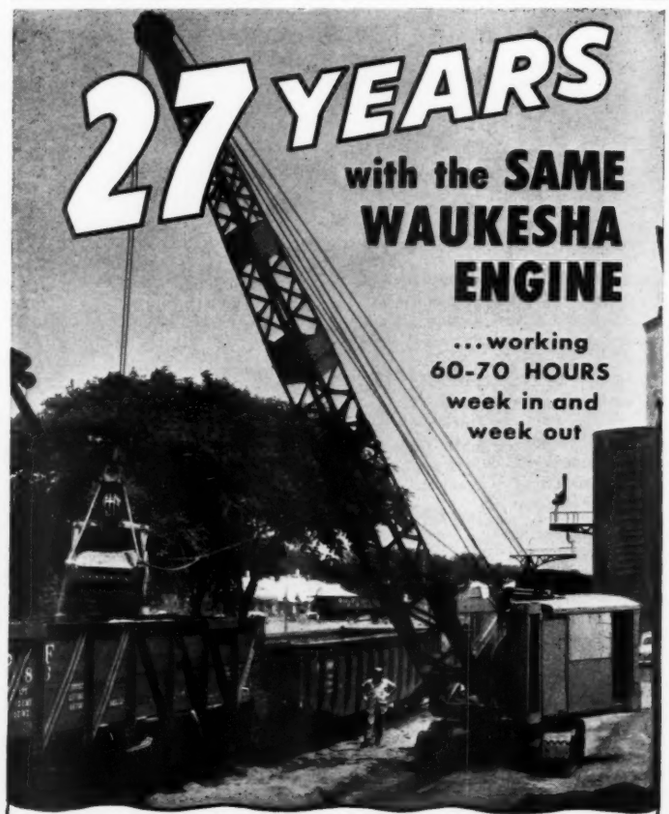
A PLOWING DISC HARROW

Rugged, reliable specifications are built into this machine giving you the dependable performance thousands have come to expect of Alexander equipment. This Plowing Disc Harrow is the answer to your mixing, compacting and land clearing problem for roads and right of way work. After giving it a try you'll certainly agree that this big plowing tandem does the job wherever heavy discing and brush clearing work is required.

SPECIFICATIONS

Model Number	Sections	Disc Size	Number of discs	Width of cut	Weight
17-700	Single	26"	10	8½'	2800
17-701	Tandem	26"	20	10'	5340
18-700	Single	28"	10	8½'	2850
18-701	Tandem	28"	20	10'	5425
17-702	Single	26"	8	7'	2450
17-703	Tandem	26"	16	8½'	4850
18-702	Single	28"	8	7'	2495
18-703	Tandem	28"	16	8½'	4975

ALEXANDER MANUFACTURING COMPANY
P.O. Box 407 – Dept. CE – Picayune, Mississippi



Unloading 32 railway cars of sand in 9 hours! That takes a fast operator, a good crane, and speedy, responsive, reliable power.

Contractors L. V. Hites and M. W. Martin of Topeka, Kansas, have such a combination.

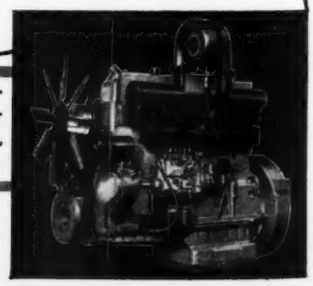
Operator, Earl Walker, has been speeding up construction jobs with this Waukesha Engine powered American Crane ever since 1928.

That's 27 years' straight – working 60 to 70 hours every week. The Waukesha JL (Serial G-181) is the crane's original engine. It's had several overhauls, of course. Once it got a set of second-hand blocks (when new ones couldn't be had). Sure they offer Earl new cranes. He likes this crane and its Waukesha.

...and modern Waukesha Engines have even greater stamina and reliability

GAS • GASOLINE • NORMAL or TURBOCHARGED DIESELS
—up to 1135 horsepower for every industrial service

Modern 1197 cu. in. Waukesha Turbocharged Diesel—Model WAKDBS—over 350 hp—used in many makes of cranes, shovels and heavy trucks. Send for bulletin.



279
WAUKESHA MOTOR COMPANY
WAUKESHA, WISCONSIN
NEW YORK • TULSA • LOS ANGELES

CONVENTION CALENDAR

June 13-18 American Society of Civil Engineers

St. Louis Convention, Jefferson Hotel, St. Louis, Mo. Brice R. Smith, general chairman, c/o Sverdrup & Parcel, Inc., 1118 Syndicate St., St. Louis, Mo.

June 19-July 2 Material Handling Training Conference

Second Annual Conference, Lake Placid Club, Lake Placid, N. Y. James L. Bright, director, MHTC, 56 Robbins Road, Lexington, Mass.

June 20-22 School for Highway Superintendents

Session sponsored by Cornell University, on university campus, Ithaca, N. Y. J. W. Spencer, highway research and extension engineer, Department of Agricultural Engineering, Cornell University.

June 26-July 1 American Society for Testing Materials

Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. John S. Pettibone, assistant technical secretary, ASTM, 1916 Race St., Philadelphia 3, Pa.

June 27-29 American Society of Landscape Architects

Fifty-sixth Annual Meeting, Sheraton-Cadillac Hotel, Detroit, Mich. John I. Rogers, general chairman, ASLA, 906 Durant St., Lansing 15, Mich.

July 5-15 Conference on Soil Engineering for Airfields and Highways

Conference sponsored by Massachusetts Institute of Technology, on institute campus, Cambridge, Mass. Summer Session Office, 7-103, MIT.

July 17-20 National Association of County Officials

Meeting, John Marshall Hotel, Richmond, Va. Keith L. Seegmiller, executive secretary, NACO, 1616 Eye St. N. W., Washington, D. C.

August 1-5 National Shade Tree Conference

Conference, Mar Monte Hotel, Santa Barbara, Calif. L. C. Chadwick, secretary-treasurer, NSTC, Department of Horticulture, Ohio State University, Columbus, Ohio.

Volume on engineering aspects of conservation

All phases of soil and water-conservation engineering are covered in a new book published by John Wiley & Sons, Inc., New York, N. Y. Three Iowa State College professors of agricultural engineering and a U. S. Department of Agriculture engineer are the authors.

"Soil and Water Conservation Engineering" is a professional text for agricultural engineering students, but is expected to be equally valuable to men already in the engineering field. Hydrology and soil physics, aspects of conservation as it affects the engineer, and such topics are erosion, earth dams, flood control, drainage, irrigation, land clearing, gully control, and the legal aspects of conservation are treated extensively.

Richard K. Frevert, Glenn O. Schwab, and Kenneth K. Barnes, all of Iowa State College, and Talcott W. Edminster of the U. S. Department of Agriculture are authors of "Soil and Water Conservation Engineering." The book is priced at $8, and may be ordered from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

New welders announced are ac transformer type

■ Operating convenience has been stressed in the design of a new line of ac transformer-type arc welders announced by Hobart Bros. Co., Troy, Ohio.

Model TLP-253-S, with capacitors, and Model TL-253-S, without capacitors, are dual rated at 250 amps on a 30 per-cent duty cycle, or 200 amps on a 50 per-cent duty cycle for operation on single-phase 60-cycle 230-volt supply lines.

Welding-current selection is made through a simple twist of a rubber hand wheel and rheostat knob. Both voltage and amperage are regulated to give the desired control of arc characteristics for a variety of welding jobs.

The transformer is the saturable-leakage-path type said to offer efficiency, ease of arc striking, and smooth welding.

For further information write to the company, or use the Request Card at page 18. Circle No. 129.

A new Hobart ac transformer-type welder.

LIPPMANN GRIZZLY-KING 42x48 JAW CRUSHER

Used by the largest

-because it is the largest

IN OHIO — One of the many big Lippmann Crusher installations. Here a Lippmann 42x48 continues to set production records.

COMPARE THESE FEATURES WITH ANY OTHER OVERHEAD-ECCENTRIC JAW CRUSHER:

in size and production — tops in service

Lippmann Grizzly-Kings continue to dominate the giant size (30x42 to 42x48) as well as regular size (12x36 to 24x36) overhead eccentric jaw crusher fields. A Grizzly-King was the world's largest 8 years ago and a Grizzly-King is still the world's largest today — in size (dimension and weight), in output (up to 1200 tons per hour) and in maintenance savings (only lubrication in most instances).

That is why the country's largest producers of crushed stone set production and service records with these Lippmann giants . . . and why others are installing them *now*.

You can get Grizzly-King *benefits* only by *using* "Grizzly-Kings". And remember this . . . not one of these big Lippmann crushers — whether 42x48 or smaller — has ever failed or failed to satisfy. Learn about Grizzly-King's advantages by contacting your local Lippmann dealer or the factory direct, today.

1. Heaviest, largest-diameter (17" at center) forged alloy shaft.

2. Largest, highest-capacity bearings for longest wear (swing-jaw bearings 15¾" I.D.; frame bearings 12⅝" I.D.). Close mounting of frame and jaw bearings combined with large shaft size, reduce shaft bending moment to almost nil.

3. Largest, heaviest flywheels assure maximum impact delivery of jaw against stone, and sufficient momentum carry-over to reduce power needs.

4. Longest jaw dies for more efficient nipping angle and larger crushing area, plus specially designed curved and corrugated surfaces for better, faster crushing action.

5. Multi-layer main frame construction, instead of single plate, for superior strength and resistance to fracture.

6. Large, full-size 42"x48" opening is maintained during full cycle of jaw because Lippmann establishes jaw-opening size at the minimum opening during eccentric shaft rotation. This assures constant acceptance of full size rocks, regardless of the jaw's position during the crushing cycle.

Typical Comments on Lippmann "Grizzly-Kings" from the field —

"Wouldn't have any other crusher but a Lippmann"

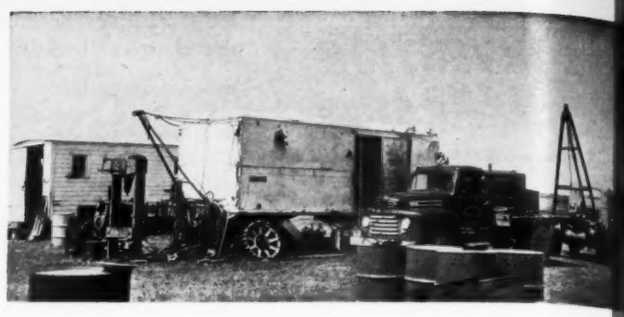
"Crushed 1,200,000 tons without turning jaw dies . . . and they're still going strong"

"Haven't turned my Grizzly-King dies even after 2½ million tons"

"During the 5 months it has been in service, it has required no adjusting or servicing except for lubrication"

NEW LIPPMANN ENGINEERING WORKS
4603 W. MITCHELL STREET
MILWAUKEE 14, WISCONSIN

Mobile construction camp keeps grading crews happy



The men who push the big Cats and Tournapulls through the seemingly endless cycles of this Dakota grading job are a pretty contented crew. Though many miles from the sort of house-with-a-yard neighborhood that spells home to most people, they enjoy home-cooked food and see their families every night. Both steady employment and normal home life are theirs, despite the fact that this job is far out in the Dakota plains.

The secret of their contentment is found in a modern mobile construction camp located near the job site. Here neat rows of house trailers are homes for those men whose families can travel with them. The other men live in comfortable bunkhouses which are a far cry from the old construction gang facilities. Everybody gets three good meals of home-cooked food each day in the camp dining room. Hot and cold running water are always available in the shower and wash room, and each trailer is served with electricity and running water.

William Collins & Sons, Inc., Fargo, N. Dak., highway contractor, knows that this mobile construction camp is one of its most valuable assets. Year after year, these same workmen join the Collins crew as the construction season opens in the spring, following wherever the work leads them until cold weather calls a halt in the late fall. Some of the men have been with this crew more than 20 years. Most of them have returned each spring since the war. Last season 44 out of 45 men who had worked the previous season were on hand for the start of the work in late April.

To the workmen, the camp means contentment and good living wherever the job may be. To the contractor it has many more meanings: savings, because equipment is carefully operated and properly maintained by experienced workmen; no lost time, because a full crew is on hand ready to work at all times; profits from smoothly-functioning jobs, because experienced workmen do their jobs well; freedom to bid on work wherever it may be, because the crew will follow and will be adequately cared for no matter where the job is located. All of these, of course, add up to profits in the long run.

A typical project

Although it was not located in a particularly remote area, one fairly typical project was the grading of seven miles of a realignment of U. S. 10 near Tower City, N. Dak. The job consisted of more than 400,000 cubic yards of excavation taken from the

HOMELITE TO THE RESCUE

Rained last night . . . rained the night before . . . but this job stayed on schedule. Reason? Two dependable Homelite pumps saved the day for work. Only one man needed to carry these gasoline engine driven units to the best pumping location. A quick start and dependable pumping action makes short work of rain or seepage problems.

You can do something about the weather and do it fast when you have a Homelite carryable pump. No waiting for bulky equipment . . . no loss of job time and money due to work stoppages. Ask your Homelite Representative for a free demonstration or write us for the details.

HOMELITE CORPORATION
5906 Riverdale Avenue, Port Chester, N. Y.

For Increased Efficiency in Road Roller Operation Get the *NEW*

HYDRO-MAT

All sizes for all makes of road rollers.
KOFFLER SALES CORPORATION
3757 No. Racine Ave., Chicago 13, Ill.

repair and maintenance facilities of this con- are housed in two trailers, which also carry for the various earthmoving rigs used on the he truck at right is used to haul the trailers from amp to another, and is equipped with a pipe e to do heavy lifting.

C&E Staff Photos

This 3,700-gallon tank trailer supplies the entire camp with water. Individual trailers have small electric pumps which send the water through hoses to trailer outlets. Hot and cold running water is available in the shower and wash house in background. ►

wide flat ditches and built up into a roadway with a 48-foot top and 4 to 1 slopes. A 3½-inch lift of gravel 24 feet wide was placed later by Collins' graveling crew, which usually operates independently.

The last week in July, 1954, the Collins mobile camp pulled into a carefully selected camp site on a gently sloping hillside near one end of the job. The site, selected personally by Kenneth Collins, had plenty of space for the 15 or more private house trailers, as well as the cook car, office trailer, bunkhouses, and other units. Collins considers 15 acres about a minimum camp site area to assure comfort and privacy for the 70 people who normally live there.

While the families were unloading washing machines from pickup trucks, setting up TV antennas, and otherwise settling their belongings, one of Collins' truck-tractors spotted a 3,700-gallon tank trailer near the center of the camp. This tank contained the camp's supply of pure water. Plastic hoses were soon strung from the water tank and connected to small electric pumps on each trailer. These pumps deliver the water under pressure to fixtures in the trailer.

At this camp site the Ottertail Power Co. had set a transformer on a nearby high line and stepped the voltage down to the 120-240 volts commonly used. Electric power was taken from the line through a single meter and furnished to each trailer.

When power is not available at a camp site, Collins simply starts up a Caterpillar 25-kva, 240-volt diesel generator carried for that purpose, and the entire camp can use the power.

To provide for disposal of garbage, rubbish, and other refuse, a dozer digs a large hole in a remote area of the camp. All refuse is dumped in this hole. Each day it is saturated with diesel fuel and burned. When the camp is moved, the dozer covers the hole. Waste water from the kitchen and wash rooms is drained to a sump where it can seep away. Here the generous camp area and hillside location help eliminate any sanitation problems.

Serve many meals

Near the entrance to the camp is the Prairie Schooner office trailer which is the contractor's field office. Here payrolls are prepared, cost accounts kept, equipment records maintained, materials and supplies purchased, and, in fact, all normal office functions carried on. The field-office manager sends in all payrolls, etc., to the home office located at 606 Black Bldg., Fargo, N. Dak., where all cost

Slope Meters Mean *Efficiency Plus* on Your Tractors, Dozers & Graders

Slope Meter installed on your earthmoving equipment increases working efficiency by telling the operator, automatically, the exact crown or slope on which he is working. Slope Meters cut construction costs on highways, airports, dams, and building sites.

Order from your Equipment Distributor today or from
THE SLOPE METER CO, EXCELSIOR, MINN.

No costly re-coating between pourings

Forms strip easily

Eliminates costly rubbing of oil stain and grain marks

Leaves concrete clean, smooth . . . ready for decorating

Not an oil . . . eliminates slip hazards

How to get more than 10 re-uses from plywood forms!

Coat them with

formfilm

Protect your investment in plywood forms with FORMFILM. It's a tough, abrasion-resistant, alkali- and water-resistant coating (not an oil). Eliminates raising of wood grain and reduces honeycombing.

A Subsidiary of Sun *Chemical Corporation*

HORN

A. C. Horn Co., Inc.

Manufacturers of materials for building maintenance and construction since 1897.

FREE INFORMATION!

A. C. Horn Co., Inc., Dept. HI-622
Long Island City 1, N.Y.

Please send Money-Saving Facts on FORMFILM.

Name_____ Title_____

Firm Name_____

Address_____

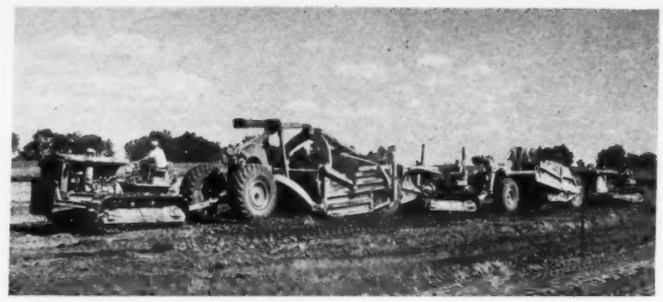
City_____ State_____

DIVISIONS OF SUN CHEMICAL CORPORATION

HORN • **HUDSON** • **WILLEY** (paints, maintenance and construction materials, industrial coatings) • **WARWICK** (textile and industrial chemicals) • **WARWICK WAX** (refiners of specialty waxes) • **RUTHERFORD** (lithographic equipment) • **SUN SUPPLY** (lithographic supplies) • **GENERAL PRINTING INK** (Sigmund Ullman • Fuchs & Lang • Eagle • American • Kelly • Chemical Color & Supply Inks) • **MORRILL** (news inks) • and **ELECTRO-TECHNICAL PRODUCTS** (coatings and plastics)

accounting and permanent records are kept. The office is equipped with a Remington portable typewriter, Monroe calculator, L. C. Smith adding machine, and other equipment. Alex Hill, office manager, looks after this office, keeps the records, and is general supervisor of the camp.

Next to the office is the cook car. This 8×36-foot trailer contains a very efficient kitchen and a dining room which can seat 20 men. Mrs. Clayton Lene, wife of one of the workmen, and her daughter prepare and serve the meals. Breakfast is served at 6 a.m., dinner in two shifts at 11:30 and noon, and supper also in two shifts at 5:30 and 6 p.m. The night shift carries its lunch. Normally 20 to 25 men are served at each meal, but it is not uncommon to have a few extras drop in. A nominal charge per meal covers most of the cost of operating the cook car. This is the only charge made by the contractor for any of the services furnished in the camp.



Comfortable living conditions off the job are reflected in worker satisfaction and greater efficiency on this Collins grading job. Here Cat D8's pull and push-load a LeTourneau W scraper (center) and Caterpillar 80 scraper.

Beyond the cook car are approximately 15 privately owned trailer homes representing a wide range of makes and models—all arranged in neat rows. In another area are the two bunkhouses for single men or those whose families cannot travel with the crew. Not far from the bunkhouses is the wash room, where electric water heaters provide a constant supply of hot water for showers and washing.

In a corner of the camp site, away from the living quarters, Collins spots the two big semitrailers which carry the equipment maintenance and repair section. Here are supplies, repair parts, and lubricants for the grading equipment, as well as tools and equipment to assist the mechanics in everything from daily maintenance to complete overhauls. A Lincoln 200-amp welder, a hydraulic press, and a large rack of special tools are kept at the camp, while a field service truck carries oxyacetylene welding and cutting tools, a Hobart 300-amp welder, and a full assortment of mechanic's tools for maintenance right in the field. A Mack truck-tractor used to tow the trailers from one camp to another is rigged with a pipe A-frame to assist with heavy lifting.

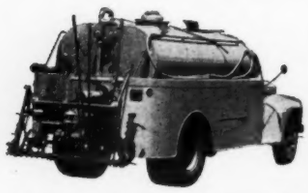
This complete camp is set up and in full operation almost as soon as the units have all arrived at the site. No time is lost getting the grading equipment to work on the job. A Martin two-axle low-bed trailer makes several trips bringing in the tractors and other equipment.

On this project Collins used five Caterpillar D8 tractors pulling LeTourneau, Bucyrus-Erie, and Caterpillar scrapers, and three LeTourneau, Model A Tournapulls. Two Cat D8's served as pushers for the scrapers and a D7 with dozer shaped up the fills as they were placed. A LeTourneau sheepsfoot roller pulled by a Cat D6 helped with the compaction, and a Caterpillar No. 12 motor grader did the finishing. All of the

PAVING COSTS REDUCED by

CARTWRIGHT IMPROVED

ASPHALT DISTRIBUTOR

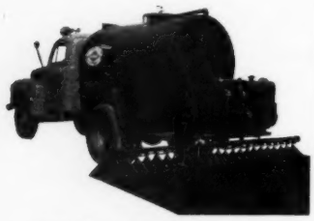


Precision Model with 1,250-gallon tank.

Blacktop paving contractors say that Cartwright Asphalt Distributors are better balanced, more compact, easier serviced and do a better paving job at lower cost of operation. They apply more material per day, year after year.

Manufactured in two models, equipped with Cartwright "Straight-Line" Hot Spray Bars up to 24 feet long, which are full-circulating under pressure. No nozzle drip. Patented circulating system provides balanced pressure when spraying and circulation of 300 gpm for faster heating of spray bar and nozzles. Fan pattern gives light, even application without streaks. Straight line starts and clean cut-off on straight line.

Tank capacity 600 gallons and up. Ford industrial power plant.



"SD" Model with 800-gallon tank.

"SD" Model is moderately priced for limited budget, has 3" pump, 12-foot spray bar, and will mount on 60" cab-to-axle truck.

Write for literature and prices.

CARTWRIGHT
INDUSTRIES, INC.
P. O. Box 3251, S. Highlands Sta.
Birmingham, Alabama

How a fast, compact TENNANT Sweeper...

sets a new standard in clean, LOW-COST sweeping

In busy downtown areas, where *clean* sweeping counts most, but is costly—a compact TENNANT Power Sweeper pays for itself fast. It not only *does the work of a crew of men;* it sets a new standard for clean work. You'll see the difference.

Sweeping easily around parked cars, its powerful brush-and-vacuum system rapidly cleans a 48" path. Picks up dust, dirt, paper, sand—the usual loose light litter found in gutters, on walks and in alleys. Does a remarkable job.

It's rugged . . . compact . . . easy to use; and superbly engineered for long, dependable service.

Write today for details.

SPECIAL FEATURES

- Sweeps 4 to 8 times faster than by hand.
- Sweeps EXTRA CLEAN; has vacuum dust control.
- Dumps load mechanically.
- Cleans 48" path; can sweep flush with walls, curbs.
- Reverses instantly.
- Steers easily in traffic; has 38" wheelbase.
- Can also be used in PARKING LOTS, RAMPS, GARAGES, etc.

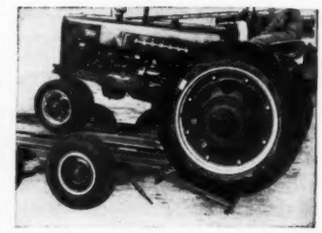
G. H. TENNANT COMPANY
2534 N. 2nd St., Minneapolis 11, Minn.

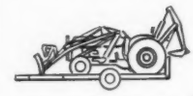
TENNANT POWER SWEEPERS

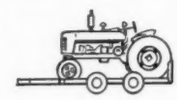
SPECIALIZED MAINTENANCE EQUIPMENT

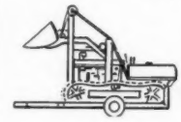
HAULETTE

America's Most Advanced Tractor Trailer









QUICKER LOADING FASTER and SAFER HAULING

EASIER TO GET YOUR EQUIPMENT ON THE JOB

It is only natural that Fayette, leading designers and manufacturers of trailer undercarriage assemblies, should engineer the finest trailer for easier and safer transport of tractors and tractor equipment. This being made possible by the patented features of the famous Fayette undercarriage design.

With Haulette you can quickly and safely haul equipment out in the field for contract work, picking up tractors for service using a light pickup truck.

Because you increase your efficiency with Haulette, it soon pays for itself in time saved and better service.

WRITE TODAY FOR COMPLETE SPECIFICATIONS AND PERFORMANCE DATA.

FAYETTE MANUFACTURING CO.
400 FIRST ST., FAYETTE, OHIO
CONTRACTORS AND ENGINEERS

machines were equipped with lights for night operation. General illumination was provided by a pair of trailer-mounted Kohler generators, each carrying two floodlights.

Two crews working 10-hour shifts six days a week kept the equipment operating almost around the clock and moved an average of 100,000 cubic yards of material per week. Hauls ranged from only a few feet to as long as half a mile. The night shift started at 7:00 p.m. Sunday night, completing its week Saturday morning. The day shift began its week Monday morning and was through at 6:00 p.m. Saturday. By changing shifts each week, the men had short and long weekends alternately to help break up the montony of the long work weeks.

A Chevrolet lube truck carrying an assortment of Graco, Alemite, and Lincoln equipment, together with a supply of lubricants and an air compressor, lubricated the equipment right on the job. Machines were lubricated at lunch time and between shifts if possible, but were stopped during working hours if necessary to assure that they would be lubricated each shift. Fuel was delivered right to each piece of equipment by tank wagon.

Just about a month from the time the camp was set up, this grading job was ready for the gravel crew to take over. The next grading job on the schedule was located near Rocklake, N. Dak., more than 200 miles away. Before the gravel crew started hauling surfacing to this job they had another chore. The fleet of Ford trucks was hooked up to the trailer units of the camp, and in a matter of hours this site was vacated and the camp set up on a new site.

Thus the crew operates through the Dakotas and parts of Minnesota wherever work is available. When winter puts a stop to grading work, the equipment is moved to winter headquarters at Sabin, Minn., where five or six men give it the necessary overhaul during the cold weather.

Personnel

William Collins, Sr., died in 1951, and his two sons share the responsibilities of managing the business and running the crews. Kenneth J. Collins, president, looks after the grading operations while his brother, William R., vice president, handles the graveling crew. Clarence Eide was superintendent of this typical grading operation. Mrs. Gertrude Woods is the Fargo office manager. Resident engineer for this project was George Kenjalo, who works under D. E. Smith, district engineer of the Valley City District. F. H. Brasie is construction engineer and S. W. Thompson is commissioner of the North Dakota State Highway Department.

THE END

Our high productivity and standard of living are largely the result of a "high-energy" civilization. The United States leads in per capita consumption of inanimate energy as well as in per capita income.

DART OFF-HIGHWAY TRUCKS are made in capacities ranging from 10 to 75-tons in end, side, and bottom-dump models. The line also includes crane carriers for 8 to 50-ton cranes and transit-mix carriers for 4½ to 7½ cubic-yard mixers, including tandem-front-axle models. The unit shown is the 20-S, a 20-ton-capacity end-dump truck with a 225-hp diesel engine. For further information write to Dart Truck Co., 2621 Oak St., Kansas City, Mo., or use the Request Card at page 18. Circle No. 39.

Miller SWIVELS for Blocks

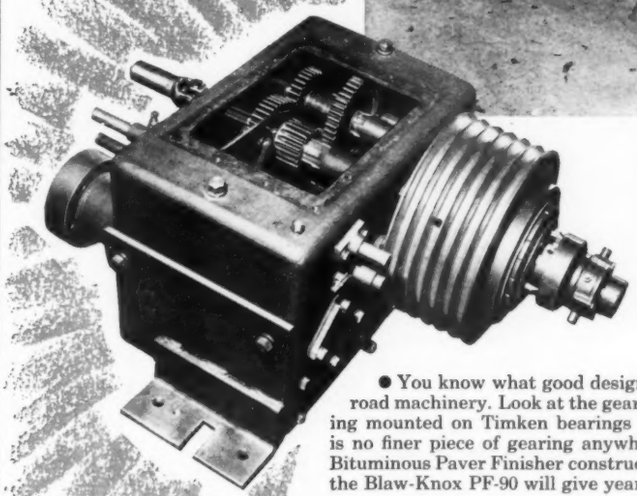
As adapted to blocks, MILLER Ball Bearing Swivels prevent loads from spinning and fouling the lines. Miller Swivels turn freely under heaviest loading (capacities to 250 tons). Small Miller Swivel on dead end simplifies restringing —no line twist or kinking.

Let us work with you to adapt Miller Swivels to your particular needs.

Write for Catalog and Prices

GENERAL MACHINE and WELDING WORKS, Inc.
P. O. BOX 938, POMONA, CALIFORNIA

the BLAW-KNOX —a BETTER BUILT *Bituminous Paver*



It is only a matter of minutes to increase or reduce screed and tamper extensions for wider or narrower pavements—just bolt on the extensions—no complications. Here a Blaw-Knox PF-90 is laying a narrow course on a street job.

● You know what good design and construction means in a piece of road machinery. Look at the gear case above. Cut gears on splined shafting mounted on Timken bearings and all running in an oil bath. There is no finer piece of gearing anywhere. This is typical of the Blaw-Knox Bituminous Paver Finisher construction. It is a part of your assurance that the Blaw-Knox PF-90 will give years of service without rebuilding.

Simplicity of design combines with precision manufacture to make upkeep and operation easy. Timken bearings (91 of them) are used wherever good engineering indicates they can be advantageously applied. They cut power requirements and simplify lubrication. The addition or removal of screed sections and associated parts for wider pavements is a matter of minutes with few parts.

But, most important of all is the simplicity and better design inherent in wheel operation. Wheel operation and pneumatic tires eliminate the 500 to 700 parts characteristic of crawlers with all their attendant upkeep problems. Wheel design assures more accurate control. Pneumatic tires absorb vibration and subgrade irregularities and combine to make it possible for the PF-90 to outproduce any black top paver on the market today. Some of the country's leading contractors are replacing or adding to their present equipment by purchasing the Blaw-Knox. You owe it to yourself to find out about the PF-90.

On wheels it will pave for less

BLAW-KNOX

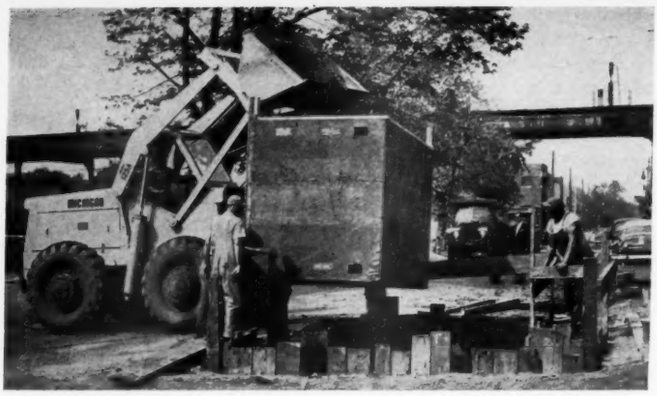
BLAW-KNOX COMPANY
Construction Equipment Division
1916 State Street
Nunda, New York

Case history

Tractor shovel doubles as versatile crane

Job efficiency and considerable economy were realized by a Merrick, N. Y., contractor recently when a tractor shovel originally intended only for trenching work "doubled in brass" by serving as a handy crane for lifting and transporting concrete forms and other equipment and materials.

Horn Construction Co., contractor on a job calling for construction of 79 manholes and installation of 2 miles ef electrical duct line in the Borough of Queens, New York City, found that by using the Michigan 125A tractor shovel for jobs other than trenching he saved time, labor, and other equipment—all of which ultimately means savings in construction costs.



In addition to digging trenches and excavating for manholes, this Michigan 125A serves as a crane. Here the rig prepares to lower a concrete form into a manhole excavation. Horn Construction Co., Merrick, N. Y., used the Michigan for many other lifting and transporting jobs on this project.

Although purchased primarily for the trenching operation, the Michigan 125A was outfitted with a chain on its bucket and used for many lifting jobs. Big concrete forms were lowered into manhole excavations by the ingenious "crane"; manhole frames and covers were carried by the bucket; and heavy H-beams and other materials were easily lifted and moved from one location to another.

One important saving effected by this use of the Michigan tractor shovel involved a big crane, which the contractor had previously expected to move from place to place for these lifting jobs. The ready adaptability of the Michigan 125A eliminated the necessity of moving this big rig from one end of the long project to the other.

Faster production and the necessity for fewer laborers resulted from use of the Michigan unit, the contractor reported.

Changes in sales setup for Fairbanks, Morse

Effective the first of next month, John C. Elmburg will become assistant general sales manager for Fairbanks, Morse & Co., Chicago, Ill., maker of compressors, pumps, generators, engines, and allied equipment used in construction. Mr. Elmburg, manager of the company's branch in Portland, Oreg., succeeds Harry L. Hilleary, who will retire.

With Fairbanks, Morse & Co. for 26 years, Mr. Elmburg has previously been technical assistant, field engineer, department manager, and manager of the firm's Boston, Mass., and Atlanta, Ga. branches. William F. Wahlenmaier will take over the management of the Portland branch.

New design doubles life of

crawler tracks

There are two reasons for the spectacular record of KENSINGTON crawler tracks wherever they have been tested . . . (1) improved design, and (2) superior wear-resisting alloyed manganese steel.

First . . . KENSINGTON engineers have designed a one-piece rail that ends the twisting and weaving which contributes to so much wear in ordinary tracks. Further rigidity and near-perfect alignment is gained by use of heat-treated alloy pins pressed tightly in place under high pressure. Grousers are heavied-up at all vulnerable parts to resist bending and breaking.

Yet, despite these important design changes, KENSINGTON *rails and grousers are interchangeable with the original parts furnished with your tractor.*

Second . . . the hard, KENSINGTON-developed alloyed manganese steels actually fight back against wear. They constantly develop extra surface hardness when exposed to friction, abrasion and impact.

KENSINGTON tracks arrive from the factory ready-assembled.

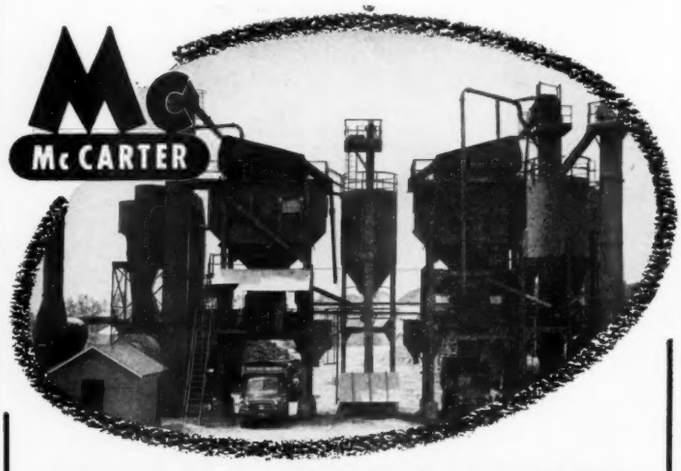
Learn for yourself how KENSINGTON tracks will lower your crawler maintenance costs and improve your operating efficiency. Coupon will bring details.

Kensington STEEL COMPANY

SUBSIDIARY OF POOR & CO., CHICAGO

KENSINGTON STEEL CO.
Dept. A 505 Kensington Ave., Chicago 28, Ill.
● Please send information on crawler tracks for tractor described below. I understand I will be under no obligation.

Make of tractor_____
Model_____ No. tracks per belt_____
Width of grouser_____
NAME_____
COMPANY_____
ADDRESS_____
CITY_____ ZONE_____
STATE_____



ASPHALT MIXING PLANTS
2000 TO 6000 LB. CAPACITY

20 years experience in design and manufacture of this truly balanced equipment, assures McCarter customers of standardized parts and minimum costs.

McCarter standard plants — designed and manufactured in their own works are readily adaptable to your special requirements. Individual units also available.

DRYERS (hot or hot & cold material, center outlet type) • MIXERS • ASPHALT BUCKETS (Steam, hot oil or electric heated) • AGGREGATE HOPPERS • BINS • APRON TYPE FEEDERS • CYCLONE COLLECTORS • ELEVATORS • STEEL STRUCTURES

Our Sales Engineers will gladly consult with you!

REPAIRING AND REMODELING OLD PLANTS—A SPECIALTY

Mc McCARTER IRON WORKS, INC. Norristown, Pa.

IGLOO

KEEPS WATER COOL . . . LONGER

On the job, your crews can count on a ready supply of cool, pure water—if they take along a sturdy, easily portable IGLOO water cooler! Igloo's fully-corrugated construction keeps water chilled far more efficiently than the old-time water barrel—gives a refreshing drink every time. Insist on an Igloo—world's best portable water cooler!

CHECK THESE SUPERIOR FEATURES:

- First and only corrugated cooler
- Recessed spigot (can't be knocked off)
- Smoothly rolled hand grip on lid and slides
- Re-inforced double-lock seams
- Extra bottom support

2, 3, 5, 10 and 15 Gal. Sizes
Stainless Steel Liners Available

Ask Your Supply House Or Write

BETTIS CORPORATION

P. O. Drawer 9365 Houston 11, Texas

The 3-ton T model in the new Series C-3 of Dodge trucks is powered by a 193-hp Power-Dome V-8 engine.

New line of trucks offers wide choice of engines with increased power

■ The new Series C-3 of Dodge Job-Rated trucks for 1955 features seven engines with 12 horsepower ratings. Advances in the truck line include increased power, new styling, new cabs with wrap-around windshields and rear windows, increased glass area, new automatic transmissions, and wider use of power steering and power brakes.

Maximum gvw ratings of the new trucks range from 4,250 to 40,000 pounds with gross-combination-weights up to 60,000 pounds. Offered with a choice of 6-cylinder and V-8 engines ranging from 103 to 202 horsepower, these trucks are designed to meet approximately 98 per cent of all hauling needs. A variety of axles, springs, transmissions, frames, and other components are available for specific individual needs.

The line includes a total of 22 stake or platform models in four lengths in ½ through 2½-ton units. Three basic Power-Dome V-8 engines —all using regular grades of gasoline —power the new Series C-3. Horsepower ratings are 169, 175, 193, and 202, as compared to a high of 172 in the preceding Series C-1.

A new Super Truck-o-matic three-speed automatic transmission is available for the six-cylinder, 1½-ton Models F and G, and the 1½-ton FN6 Forward Control model. Power brakes are available on most trucks while power steering is offered on all models from the 1½ through 4-ton units.

In the low-tonnage ½, ¾, and 1-ton models, the buyer has a choice of a 110-hp, six-cylinder engine or a new 169-hp Power-Dome V-8 engine. The latter represents an increase of 24 horsepower over the V-8 engine powering the previous Dodge C-1 low-tonnage line.

Four entirely new cabs are offered in the low-tonnage units and most of the new C-3 models. Each cab has approximately 62 inches of hip-room and 59 inches of shoulder-room to provide comfortable space for three men.

A new PowerFlite no-clutch automatic transmission offered in the smaller trucks as well as in the Forward Control models consists of an efficient torque converter and two-speed planetary-gear transmission. Tubeless tires are standard on ½ and ¾-ton models.

For further information write to Dodge Division, Chrysler Corp., Detroit 31, Mich., or use the Request Card at page 18. Circle No. 30.

performance speaks LOUDER...

Compare this MERTON OVERLOADER production record with your present operation

Project: Loading mixed coal and slack from stock pile to trucks.

Density: 1 cu. yd. equals 1,200 lbs.

Floor: Packed coal, surface uneven and wet.

Bucket: 1 cu. yd.

Data:

No. Truck	Time Min.	Time Sec.	Loading Cycles	Loaded Wt.
1	2	20	8	10,760 lbs.
2	2	04	7	8,320 "
3	2	10	8	9,960 "
4	2	18	8	11,600 "
TOTALS:	8	52	31	40,640 "

Average: 2.31 tons per minute—approx. 138.6 tons per hour!

FEATURES INCLUDE:

1. From 40% to 100% faster operation—direct line loading without time-wasting pivoting and manuevering.
2. Variable height discharge from 6'11" to 11' 2".
3. Front end loader advantages with multi-bucket conveyor speed.
4. Diesel power economy.
5. Handles all types of bulk material rapidly and efficiently.
6. Simplicity of operation and design—for big savings in maintenance, operator fatigue, and purchase cost.

FOR COMPLETE INFORMATION AND LOW PRICES, ASK YOUR DEALER, OR WRITE DIRECT.

SEC seaboard equipment co., inc.
7 Hanover Street New York 5, N. Y.

HOW TO HANDLE WET JOBS

DEEP PIT EXCAVATION

Malta, N. Y.

Excavator: Maloy, Dugan & Maloy
Gen'l Contractor: Carl Buhr, Inc.

DEEP PIT STABILIZED DESPITE STEEP SLOPES

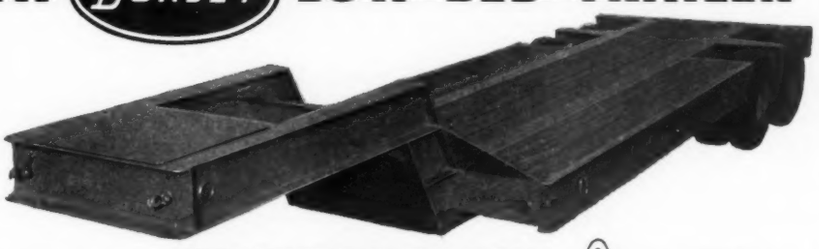
THIS JOB TOOK great engineering skill—to dig a 37-ft deep pit in fine sand containing 17 ft of water—to do this without collapse of the steep slopes, so that quantity of excavation could be held to a minimum. Furthermore, borings taken only to subgrade had not revealed a silt layer 6 ft below, and this added still another headache, since artesian pressure threatened to "blow the bottom."

• Using a combination wellpoint dewatering and pressure relief system (see photo) Griffin engineers stabilized the excavation . . . kept subgrade dry...solved all the problems economically and dependably. What's *your* problem?

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

So Light, to be so Strong

THE NEW DORSEY LOW BED TRAILER



Now, a 20-ton trailer weighing only 8,250 pounds cuts operating costs and gives busy heavy haulers more loads within legal limits. High tensile steel main channels and close-spaced all-welded cross members give extra strength to the Dorsey HTS series of low bed trailers also available in 15, 25, 30 and 35-ton capacities. Flat-type gooseneck steps up efficiency and versatility. Wheels in tandem "walk" on stub axles over rough terrain, pull easily on highways.

Only Dorsey dares put the weight on this tag on every trailer!

Typical loadings show versatility of flat-type gooseneck Dorsey HTS low bed trailers which are delivered ready for work with brakes, recessed lights, tool box as standard equipment. Grader ramps are optional at extra cost.

DORSEY TRAILERS SALES-SERVICE

SEE YOUR DORSEY DISTRIBUTOR OR CONTACT

DORSEY TRAILERS ELBA, ALABAMA

The first 36 bents, one of the approaches, and the causeway on the eastern end of the Chesapeake Bay Bridge were constructed by Baltimore Contractors, Inc.

MEN

Fifteen-million-dollar formula

Work hard and blow your own horn, advises this Baltimore contractor—and he ought to know

by BILL DARDEN

There's no arguing with $15 million. And when that figure represents the annual business volume of a comparatively young firm, you can bet there's a sure-fire success formula somewhere in the background that turns the trick.

Vic Frenkil is the man with the formula—and the $15 million proof. Founder, owner, and spark of Baltimore Contractors, Inc., that city's second largest construction firm, he has based his highly successful operation on these two dictates: work hard and blow your own horn. The combination, along with some first-class efficiency methods, has proved a winning one.

In the 22 years since he first ventured into the contracting business, Frenkil has parlayed an original capital investment of $300 into a current investment of more than $2 million. From the very outset he realized that customer satisfaction and effective public relations were the keys to success in construction, as in any other business. Today these factors receive major emphasis in his company's operations.

But there are other factors, perhaps less dramatic but no less important, that contribute to the success of Baltimore Contractors, Inc. Day-to-day efficiency methods, which spell economy and greater earnings, are the keys to the continuing prosperity of this contracting company.

Specifically, Frenkil attributes his firm's efficient and economical setup to (1) central control of purchasing and other activities and (2) a constant check on waste or other "leakage" of materials or man-hours, both growing out of (3) complete manualization of the company's operations.

Successful contractor that he is, Vic Frenkil is first and foremost a businessman—and he operates his firm as a business. Board meetings, consultations with his executives, visits from clients and other important persons, and the hundreds of other office details that go with being president of a large firm take most of his time. It is, he admits, a far cry from the early days—days when the struggling young businessman was also the firm's superintendent, extra laborer, secretary, bookkeeper, public relations man, and janitor.

Sitting in his spacious office overlooking Baltimore Harbor, Frenkil recalls with almost photographic memory details of his humble beginnings in the same seaport city. He is proud of his success, and he takes evident

This 72-in. shop-strutted Beth-Cu-Loy culvert was recently installed for the city of Vancouver, Wash. *Fabricator:* Beall Pipe and Tank Corporation, Portland, Ore.

What other culvert material matches these* BETH-CU-LOY *advantages?

For culverts and other sub-drainage requirements, road builders have long recognized the value of copper-bearing, galvanized steel pipe. Beth-Cu-Loy culvert stock is copper-bearing sheet steel. It easily meets the rigid standards of the AASHO, and offers a combination of advantages hard to beat.

Drainage pipe made of Beth-Cu-Loy is strong, yet light enough to be handled easily in long lengths. It is durable enough to withstand the impact and vibration of modern traffic. Flexible enough to simplify alignment and grade maintenance. It stands up under the action of freezing and shifting soils, and reduces root hazard. The copper content gives proven corrosion-resistance to the basic steel, which is further protected by its 2-oz coating (triple spot test).

Bethlehem does not fabricate culvert pipe, but does produce Beth-Cu-Loy galvanized steel stock, in gages 8 through 16, for those who do fabricate it. For names of fabricators in your area, just drop a line to the nearest Bethlehem office.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

The company manual is one of the major factors contributing to Baltimore Contractors' efficient operation. Here president Vic Frenkil (left) checks a maintenance procedure with Frank Sands, shop and yard superintendent.

The $3,200,000 student-activities building on the University of Maryland campus was a Baltimore Contractors project. This picture shows steel arch supports being erected by Dietrich Bros., Baltimore, subcontractors.

pleasure in sketching the picture of a determined young man who set out to carve a slice of the contracting pie —and did so despite depression conditions.

In business at 13

Vic went to work early—at the age of 9, to be exact—in his father's plumbing supply business. How much help he was at that age may be debatable, but at 13 he became a landlord and made a business of collecting rents and supervising maintenance on some apartments owned by his father. At 17 he left school to get his first taste of the contracting business.

Frenkil's father had been guarantor for a firm constructing a sewer at Silver Springs, Md. When the contractor on the job went bankrupt, Vic's father took over the project, hired men to do the work, and put his son on the job as superintendent. Fortunately, he recalls, he got along famously with the local inspector—who undoubtedly helped the youngster over some rough spots.

There were other business ventures for young Vic during those early days. For a while during his high school days he was in partnership with one of his instructors, putting down concrete pavements and steps. Later, just out of his teens, he operated a sheet metal business for a few years, eventually selling the firm for $9,000.

When he got around to starting his contracting business, it was 1931—a year of full-blown depression. Vic rented a single room, without heat or light, for $15 a month, and invested half of his total capital ($300) in signs advertising the new firm. His credit limit was $25. He paid a man $1 a day to walk about the town wearing a sandwich board and distributing handbills. That was his first public relations effort.

But that wasn't enough for Vic. Although he had to spend the day in his one-room office answering the phone ("I couldn't afford to miss the smallest job"), he spent several hours each night ringing doorbells and distributing more handbills advertising the firm. Later, when his young bride took over the telephone-answering job, he was able to get out "in the field" and supervise his jobs—

(Continued on next page)

"completely satisfied"

"people who rely on honesty and fair dealing..."

"I would unhesitatingly recommend your firm..."

"splendid performance and wonderful outcome..."

4 typical comments about FORKE BROTHERS equipment auctions

Take the word of construction men who have had experience in selling equipment — the Forke Brothers PLAN OF AUCTION gets results! Here's what four of these men have to say:

the "4-KEYS" for successful equipment selling

"We wish to take this opportunity to thank you for the very satisfactory manner in which you conducted the sale and want you to know that we are completely satisfied with the outcome..."
Perry McGlone
Perry McGlone Construction Company
Kansas City, Kansas

"It is a distinct pleasure to meet people in the business world today who still rely on honesty and fair dealing."
Marshall M. Erb
Contractor
Naperville, Illinois

"...I would unhesitatingly recommend your firm to anyone in the process of liquidating..."
Ralph Cornish
Cornish Construction Company
Greensburg, Pennsylvania

"..the more I think of your method of advertising and the way you conducted the sale, is all the more reason, I understand why the end answer was so good. ...and I want you to know I am very grateful to you and your company for the splendid performance and its wonderful outcome."
Lloyd K. Jones
Jones Construction Company
Emporia, Kansas

- FORKE BROTHERS conduct Auctions all over the United States and in Canada.
- FORKE BROTHERS have been in the professional Auction Business for over 34 years.
- FORKE BROTHERS **KNOW** the Equipment Market — how to reach it and how to sell it.

Before you sell your equipment, find out how you can sell ALL of it — the small pieces as well as the large, quickly, easily, and get the most total money for all of it.

Write today — or phone or wire collect — just ask for our "Plan of Auction." No obligation, of course.

FORKE BROTHERS
The Auctioneers
321 Sharp Bldg. **Lincoln, Nebraska** Phone 2-1045

Prominent men in city and state affairs are often guests at company parties. Pictured here with Vic Frenkil (center) are Dr. H. C. Byrd (left), former president of the University of Maryland, and Gov. Theodore R. McKeldin of Maryland. Mrs. Frenkil is at lower right.

(Continued from preceding page)

more often than not doubling as one of the crew. Contracts varied from $15 to $250, and the ambitious young contractor took on all kinds of jobs.

Probably his first big opportunity came when Vic got a contract to remove a 70-foot-high terra-cotta cornice for the Western Maryland Railway. Because of an error in estimating, he lost $1,200 on the job—a calamity that would have driven many a lesser man out of business. Vic not only survived, but insisted on carrying the loss himself rather than allow the railroad to do so. That must have been his first big effort at customer satisfaction, and it paid off; the Western Maryland has given his firm a lot of business since.

Over the years the company expanded, getting special boosts from government contracts during World War II. From a first-year figure of $22,000, Vic boosted the firm's business volume to $106,000 in the sixth year. In 1952 the volume of business done by Baltimore Contractors totaled $9 million.

Although it prefers to be known as a general contractor (road construction is about the only thing Vic's crews haven't as yet tackled), Baltimore Contractors has probably done more work in building construction than in any other category. Industrial plants, bridges, piers, college buildings and high schools, and apartment houses throughout Maryland and in several other states have the Frenkil trademark on them.

Departmentalization

Because he believes that contracting is a business, Vic Frenkil has organized his firm along the lines of an efficient industrial organization. Several years ago, he hired time-study men to analyze the company's operations. Subsequently, the firm's own engineers systematized the entire company, departmentalizing various operations and detailing them in the company's manual.

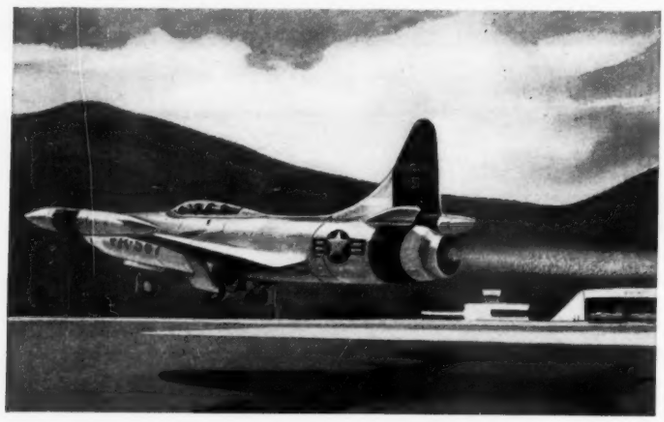
This manual, consisting of two 2-inch-thick loose-leaf volumes, contains detailed descriptions of the standard practice and methods of each department in Baltimore Contractors, Inc. It is constantly revised as changes are incorporated in the system of operation, and all employees are expected to familiarize themselves with the portions pertaining to their work.

The manual reads like a complete description of how to operate an efficient construction firm. Company policy is explained, procedures are detailed, and samples of all forms used in company business are bound in. Chapter headings break the company's operations down thus:

Methods and procedures, operations, controller, engineering, estimating, finance, subsidiaries, legal, engineering sales, personnel, projects, purchasing, sales, public relations, construction, payroll, and auditing.

Believing that a good thing should be shared, Frenkil has offered the manual to other contractors for their study and possible use as a model in organizing their own operations.

Frenkil sees his firm's all-important public relations program as covering a great many phases of day-to-day business, not the least of them being employee relations. "After all," he says, "employee relations is public relations." It is no coincidence, then,



Pave the way for jets!

...with these FLINTKOTE Products!

Provide resistance to fuels, oils, greases in critical areas. When it's time to scramble, have pavements ready!

FLINTBINDER* C-2 . . . a specially compounded hot-mix tar-rubber binder for jet fuel resistant flexible pavement. Used as surface course or overlay on asphaltic or portland cement concrete. (Meets Corps of Engr.'s specification for tar-rubber binder).

FLINTSEAL* JFR . . . jet fuel resistant hot-poured compound . . . that seals joints in concrete pavements to keep out moisture and incompressible debris. Used extensively by U. S. Air Force on concrete runways, taxiways and aprons serving jet aircraft. (Meets Fed. Spec. SS-S-00167.)

Flintbinder C-2 jet fuel resistant pavement being laid on one of many large U.S. Air Force Bases.

FLINTAR† . . . specially compounded coal tar emulsion for surface sealing asphalt pavements on service areas subjected to jet engine fuels, oils, greases and engine cleaning compounds. Squeegeed on surface, it increases pavement life. (Meets Fed. Spec. R-P-00355.)

Consider these and other Flintkote paving products for your airfield or highway projects. Write for technical data and literature.

*Reg. U. S. Pat. Off. †Trademark of The Flintkote Company

FLINTKOTE

THE FLINTKOTE COMPANY, INDUSTRIAL PRODUCTS DIVISION
30 Rockefeller Plaza, New York 20, N.Y.

BOSTON • CHICAGO HEIGHTS • DETROIT • LOS ANGELES • NEW ORLEANS • PHILADELPHIA

In Toronto, Ontario: THE FLINTKOTE COMPANY OF CANADA, LTD.
In London, England: Industrial Asphalts Company, Ltd.

Lower operating costs for 4 W.Ds *plus* amazing pep, handling ease

WARN HUBS STOP FRONT END DRAG IN 2-WHEEL-DRIVE!

Over 70,000 satisfied owners know it pays to install Warn Hubs! With Warn Hubs, 4-wheel-drive is used only when needed for traction. Most driving is in free-wheeling 2-wheel-drive with the entire front drive train disengaged. There's no drag, no gear whine, no shimmy. Tires wear longer, gas mileage goes *up*, front end repair costs are cut *way down*. And 4-wheel-drives have the pep, speed, performance and handling ease of pick-ups! Warn *Automatic* Hubs also permit high speed driving in 4-wheel-drive—a real advantage *on* or *off* the highway. Automatic or Locking (manual) drive selection models available. Fully guaranteed. Willys models factory approved, sold *only* by Willys dealers worldwide. Models for other 4 W. Ds at truck dealers, or write:

WARN MANUFACTURING CO.
Riverton Box 6064-CN, Seattle 88, Wash.

- **REDUCE FRONT END WEAR 50% OR MORE!**
- **INCREASE GAS, TIRE MILEAGE, ENGINE LIFE!**

ASK YOUR DEALER FOR FREE DEMONSTRATION

The Marylander, largest modern apartment building in the state of Maryland, was built by Frenkil's firm at a cost of approximately $4 million. Frenkil owns and operates the Baltimore apartment building under a subsidiary company.

that the company's public relations director is also head of personnel.

Officially, Baltimore Contractors takes a highly personal interest in its employees, and the attitude is an expression of Vic Frenkil's almost paternalistic nature. Of course he knows that "good employee relations give harmony to the company," but his interest goes far beyond that efficiency mark. There are all the usual benefits—sick leave, paid vacations after so many years of service, insurance, bonuses, and educational benefits. And there is a company-owned summer cottage available to any one of the 150 permanent employees and his or her family on a first-come-first-served basis. Just recently a profit-sharing pension plan was inaugurated by the company.

But the personal interest extends to home life and recreation as well. Vic recently drew up a questionnaire, to be answered by all employees, dealing with outside interests—educational, cultural, civic, and purely recreational. Where an employee's answers indicate he hasn't much activity in any one of these fields, Vic will personally recommend specific activities in which the employee might profitably engage. Undoubtedly, too, this busy businessman has spent much valuable time trying to help an employee iron out some financial, domestic, or personal problem. All this stems from Vic's sincere interest in the welfare of his employees—and from his conviction that the position of an employer carries with it responsibility for the well-being—off the job as well as on—of those who work for him.

The function of the public relations department, as explained in the company manual, is "to create good will and confidence between the company and its employees, clients, business executives, public officials, business organizations, civic organizations, and the general public." It is no accident that the employees are listed first.

Central control

Throughout the manual, the policy of central control as an efficiency measure is reflected in descriptions of procedure. All purchasing is done at the main office, and the savings thus effected are passed on to the client. All payrolls are prepared, by check, at the central office and flown air mail to the job site.

A complete cost-accounting system is in operation at the home office. Report sheets on labor, materials, and production are received weekly from job superintendents, and are compiled and recorded on punch cards by an accounting machine system. This process gives the firm a running report on operations and their costs, and permits time and money-saving planning.

Another economy measure employed by the company is a constant check on job "leakage" of materials or man-hours. Any contractor knows that waste, inefficiency, theft, or lost time can account for considerable loss on a particular job. Frenkil's system to avoid these occurrences includes, besides the elaborate report procedure, regular inspection visits to each job—once a day by the project manager, once a week by a supervisor, twice a month by the firm's vice president of operations, and a minimum of four times a year by Frenkil himself.

Frenkil's relations with the unions

(Continued on next page)

EVERYTHING YOU WANT IN A PORTABLE ASPHALT PLANT

THE LITTLE MONSTER®

- A COMPLETE ASPHALT MIXING PLANT ON WHEELS
- HIGH PRODUCTION . . . 40 TONS PER HOUR ON A 45-SECOND MIXING CYCLE
- SETS UP FAST
- UNITS ARRANGED FOR SIMPLICITY AND ECONOMY OF OPERATION
- LOW OPERATING COSTS

• Here's a real money-maker in a complete portable asphalt mixing plant. THE LITTLE MONSTER turns out consistently uniform, close-specification mixes on a quantity production basis. MADSEN'S superior engineering is evident throughout. Plant is rugged, compact and designed for easy maintenance.

For complete details write for Bulletin No. LM-1

Manufactured by

BLH Construction Equipment Division

MADSEN IRON WORKS, INC.

Subsidiary of Baldwin-Lima-Hamilton Corporation

14100 EAST ROSECRANS AVENUE, P. O. BOX 38

LA MIRADA, CALIF., U. S. A.

Whatever the job... it can be done quicker—more profitably with DIAMOND

CRUSHING, SCREENING, WASHING and CONVEYING EQUIPMENT

Our catalogs fully describe the equipment that increases production and lowers costs. Get the facts now.

PORTABLE AND STATIONARY CRUSHING PLANTS
CATALOG D-48A Quarry Plants
CATALOG D-104 Rotor-Lift
CATALOG D-5415 "77" All American Plant
CATALOG D-103 Single Pass Gravel Plant

JAW CRUSHERS CATALOG 600
ROLL CRUSHERS CATALOG D-5413

SCREENS AND WASHERS
CATALOG D-5412
Scalping and Scrubbing Screens
Vibrating Screens • Drag Washers

CONVEYORS
CATALOG D-5416
Portable and Stationary Conveyors
Belt Conveyors • Conveyor Rolls
Bucket Elevators

FEEDERS AND BINS
CATALOG D-101
Plate Feeders • Apron Feeders
Grizzlies • Bins and Hoppers

DIAMOND GENERAL LINE OF PRODUCTS
CATALOG D-106

Write for name of your Diamond Distributor

DIAMOND IRON WORKS
division
GOODMAN MANUFACTURING COMPANY
Halsted Street and 48th Place • Chicago 9, Illinois

Everything for the aggregate producer.

(*Continued from preceding page*)

are amicable, he reports, although he has a definite policy with regard to negotiations. "Once you show weakness with a union, you're done," he declares. Occasionally, it has come to a showdown, such as the time some years ago when strikers picketed a job and concrete-placing operations were halted. Frenkil and some of his key men personally visited the job, went through the picket line, and took a hand in the placing of concrete. There was good reason for this, he maintained, but generally the company avoids any such conflict with labor.

Preparedness for expansion or the unexpected is another aspect of Frenkil's operations. Baltimore Contractors could handle "several times" its present volume at the same overhead. Although it may not at first appear to be an economy measure, he carries salaried employees in several key positions "whether they are needed or not." This overmanning of the firm is a result of long-range planning, however, for Frenkil looks for continuing expansion. And he wants to be ready to bid on any kind of a job at any time. "We want to learn by doing all kinds of jobs," Frenkil states, and the company's practice of bidding on a great number of jobs bears out that statement.

Maintenance

Frenkil believes in regular maintenance of the firm's equipment, which includes well over a hundred pieces of heavy construction machinery. For marine work, there are barges, tugboats, barge-mounted cranes and pile drivers, not to mention smaller equipment. For land work, mobile cranes, shovels, and other big rigs are supplemented by compressors, engines, hoists, concrete mixers, pumps, vibrators, trucks and trailers, and dozing machinery.

All of this equipment is regularly serviced both on the job and in the home shop, located on a slip canal just off the Baltimore harbor. Frank Sands, a former colonel in the U. S. Army Corps of Engineers, is Frenkil's capable and energetic shop and yard superintendent, and under his direction a crew of more than 20 mechanics and welders repair and overhaul machinery in the shop and yard.

Right now most of this equipment is distributed over a total of 15 jobs under construction by the company. These include a $3,200,000 student activities building on the University of Maryland campus. Frenkil has built a number of structures on the Maryland campus, including a stadium, gymnasium, science building, students' union building, and dormitories.

Frenkil's firm is now completing a job on the National Gypsum Co. processing plant in Baltimore. The project has totaled over $8,500,000 in the past several years. The firm has built other plants for the same company in other cities. In 30 days the firm will turn a $7 million job over to the army at Fort George G. Meade, Maryland.

One of his largest building jobs involved construction of The Marylander, largest modern apartment building in the state, in Baltimore at a cost of $4 million. Frenkil owns and operates the apartment building through a subsidiary company.

Baltimore Contractors, Inc., has had its share of marine work, too, including the contract for one of the approaches, the causeway, and the first 36 bents on the eastern end of the Chesapeake Bay Bridge.

Frenkil the man

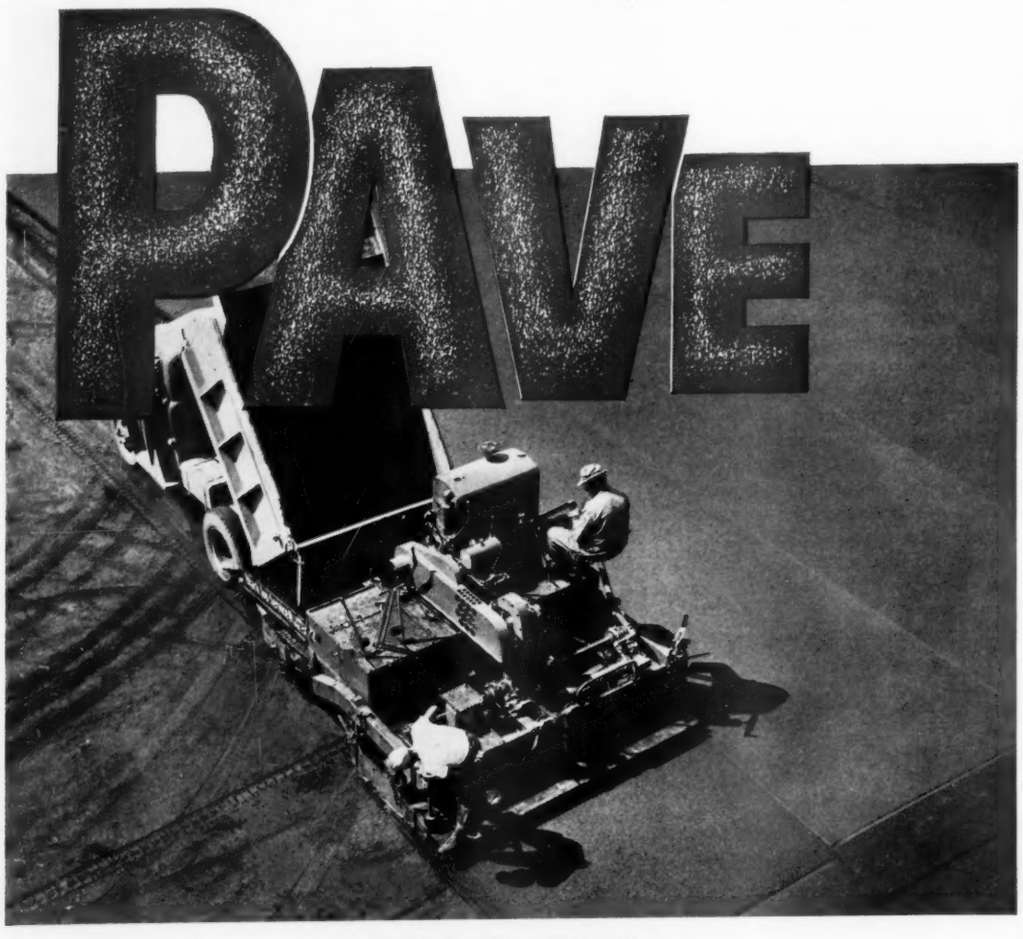
For a successful businessman, time is a most valuable element—and Vic Frenkil uses his time carefully. He is an executive who sees a great many people in a single day, and then invariably attends some social function (he and his wife also do a considerable amount of entertaining in their suburban Baltimore home) in the evening. It is no wonder that he has this advice for the busy contractor:

"In the office as well as in the field, make every minute count. When you have an appointment, forget about batting averages, golf scores, politics, and club meetings; get right down to business. Then both parties will feel the interview has been successfully concluded."

Rugged-looking and tending toward baldness, Frenkil is, at 46, in many ways a boyish individual—shy, impulsive, proud of his accomplishments, and expansive in his generosity. Many of the prominent and influential in Baltimore and Maryland affairs are his friends, and he frequently invites them to company functions—realizing that even friendship does not preclude good public relations.

Vic and his wife, Margaret, have been married since 1932. Despite the demands of his business, Vic finds sufficient time to enjoy their home and their four children: Janet, Vida, Vic, Jr., and Lennie. The boys have taken their turn at working for their father during the summer, but Vic isn't pushing either of them into the construction business. He'd like to see them get more education, and then "the decision is up to them."

Frenkil himself hasn't had all the education he could wish for, although he took some college work at Johns Hopkins University. He has imagination, however, a good example being



PAVE Profitably

PAVE with any bituminous mix—hot or cold—with the world's most widely accepted bituminous paver. No other machine or method will lay bituminous mix as quickly, perfectly or economically.

PAVE smooth riding surfaces, even over irregular bases. Automatic leveling increases or decreases the thickness of the mat to compensate for depressions or bumps in the existing surface.

PAVE with easier, reduced rolling. The tamper operates at 1200 strokes per min., compacts the mat as it's laid, assuring uniform density, a better bond between courses, and better joints between strips.

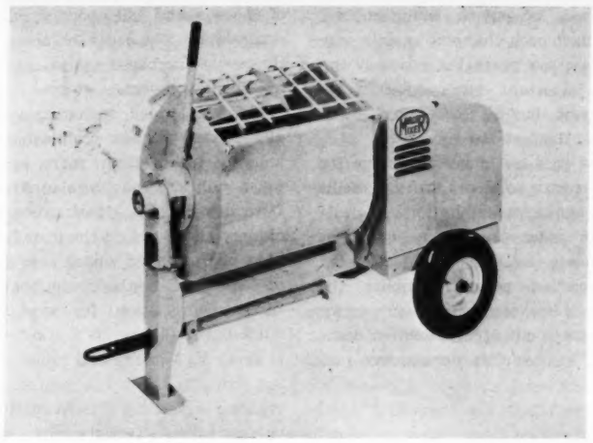
PAVE a crowned or wedge-shaped mat with quickly adjusted screed. Each side of the screed is independently controlled. Adjustments easily made while machine is in operation.

Barber-Greene
AURORA, ILLINOIS, U.S.A.

BG

WRITE for INFORMATION

descriptive literature . . . sound movies
cost studies . . . nearby job inspection . . . plant layouts



Plaster and mortar mixers now have improved drums

■ The mixer drums in the line of plaster and mortar mixers made by Muller Machinery Co., Inc., Metuchen, N. J., are now fabricated entirely of Mayari abrasion-resistant steel.

The manufacturer points out that this steel, the same as that used in large truck mixers, has demonstrated unusual resistance to wear under severe usage.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 26.

(Continued from preceding page)

the foundation pile he invented and patented. He's had time to develop cultural interests, too, and serves on the boards of both the Baltimore Symphony and the Baltimore Civic Opera. He also created the first national TV play award for students of TV dramatic art.

Being president of one of the largest construction firms south of New York City, as well as chairman or a director of such subsidiary companies as a canning firm and three realty concerns, still leaves Vic Frenkil with time for philanthropic and charitable work. He has organized his own foundation for philanthropic works, and is on the board of several fund-raising organizations. He has also served on his district's draft board.

Then, too, there are the usual professional, civic, and fraternal duties. Somewhere he finds time and energy to be active in the Engineers Club, American Society of Civil Engineers, Military Engineers, and Professional Engineers, not to mention the Big Brothers, Industrial Club, Advertising Club, the Masons, the Shrine, the Elks, the Odd Fellows, and the Rotary Club. He recently was appointed a member of the executive committee of the Building Congress and Exchange of Baltimore.

Vic Frenkil isn't a graduate engineer — many successful contractors are not—but he stoutly maintains that he'll "stand alongside the best of them."

And if business success and customer satisfaction are any argument, this Baltimore contractor has a pretty good talking point—plus $15 million worth of proof. THE END

Keystone appoints Riddell to field sales staff

William H. Riddell has been appointed to the field sales staff of Keystone Asphalt Products Co., division of American-Marietta Co., Chicago, Ill., in the southwest.

Succeeding him in the Chicago sales office are Vic Wolf and Robert Whitman.

Saves 40% in tie wire . . . with *Ideal Reel*

—says Milbern H. Kane, superintendent for Edgar Stephens Construction Company of Cairo, Illinois

"IDEAL REEL has many advantages over other methods of tying reinforcing steel," says Mr. Kane. *"It eliminates wire waste which we estimate saves us 40% in tie wire.* Saves time, too. Its easy use allows a man to make *at least 25% more ties."*

Mr. Kane also appreciates the fact that IDEAL REEL is safer and reduces the dangers of permanent eye disability and *"falling with one end of the wire tied to the steel which could cause serious injury, even death."*

Save $ $ Plus Man Hours with IDEAL REEL. *EASY TO USE,* no training necessary. *CONVENIENT*—reel and wire always at hand, ready for instant use. *PRACTICAL*—being used successfully in diversified wire-tying applications, such as metal lathing, pipe insulation, plant maintenance, stretching lines for batter boards, shipping . . . you name it. *ECONOMICAL*—quickly pays for itself. *SAFE*—approved and recommended by leading insurance companies.

Ideal Reel Company
328 Harahan, Paducah, Ky.

Have *you* seen IDEAL REEL in action? If not, send for free folder that illustrates and describes what it can do for you.

SOIL-AIRE
ROLLPAC
Ruggedly built for heavy-duty service

Detachable Outside Edger Wheel. Rolls flush with curb or wall.

$895.00

A Standout Popular-Priced One Ton Roller. Send for Catalog.

SOILAIRE INDUSTRIES
Minneapolis 3, Minnesota
Sold by over 75 distributors in United States and Canada

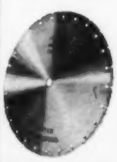
There's MORE NEW than the streamlining on the

ROCK it back... TILT it forward

AMAZING BALANCE on front or rear wheels alone gives you *a new degree of maneuverability!*

No other heavy-duty concrete cutter can compare with the new Felker Model 254! See what *maneuverability* is really like! Quickly gets into and *out of* the tight spots, does all jobs without mankilling effort, turns in its own length! See how Blade-Saver Collars stretch out blade life! Try the "254" today... Ask for demonstration from your nearest Felker distributor!

NEW FOLDER GIVES DATA— Before buying any concrete cutter get these facts! They'll convince you here's the *best* buy in the whole field!



Felker Di-Met SEGMENTED TYPE BLADES

Preferred for maximum footage at lowest cost-per-cut. Wide range of bond variations for maximum life under every condition! Ask also about the new Felker Abrasive Blades for cutting green concrete, where applicable.

FELKER *Model 254* CONCRETE CUTTER

- 25 H.P. WISCONSIN!
- NEW "BLADE-SAVER" COLLARS! Pat. App. For. Trademark Reg.
- SELF-PROPELLING DRIVE!
- HYDRAULIC BLADE ACTUATION!
- CUTS TO 6¾" DEEP!
- BUILT-IN COOLANT PUMP! Many other features!

FELKER DI-MET SINCE 1924

FELKER MANUFACTURING CO.
TORRANCE • CALIFORNIA

World's Largest and Oldest Manufacturer of Diamond Abrasive Cut-Off Wheels and Machines

MONEY

Financing developments make equipment buying much easier

by PAUL B. REINHOLD, president, Atlas Equipment Corp., Pittsburgh, Pa.

Methods of buying equipment on time have been changing rapidly over the past few years, but probably the most important development in installment buying has taken place during the last few months.

Now it is no longer necessary for a contractor to secure loans or credit from banks, manufacturers, or dealers in order to finance equipment purchases. By using the accelerated depreciation permitted under the new tax law, contractors can pay for machinery out of depreciation costs. Monthly payments during any year of the contract will about equal the depreciation which can be taken for the newly purchased equipment during the same year.

This accelerated depreciation rate, allowed only for new equipment with a useful life of three years, can be taken only for machines used after December 31, 1953. Construction machinery purchased on the installment plan is written off under the "sum-of-the-digits" method, which allows heavy depreciation for equipment while it is still new, its market value is declining rapidly, and repair costs are light. In effect, this represents a realistic operating charge, because the average machine depreciates faster, and contributes more to contractors' income, when it is new. Later, when repair costs start to mount and the value of the machine is going down at a less rapid rate, less depreciation can be taken by the contractor. But during this time, his monthly payments for the machine will be smaller.

Services offered by industrial financing firms are like the new depreciation schedules, being geared more and more to the contractor's needs. Though firms like C. I. T. Corp., New York, N. Y., have been active in the construction machinery field for some time, they have been rapidly expanding their operations in recent months. They fill a real need in the credit field for manufacturers and distributors—providing them with a quick dollar turnover and an experienced credit-checking and collection service. And they also provide a number of benefits for contractors buying on the installment plan.

Once a purchase has been approved by an industrial financing firm, the buyer makes his down payment to the dealer and executes documents provided by the financing agency. This firm then pays the dealer for the balance due on the equipment, and the contractor makes his monthly payments—under the new depreciation schedule—to the financing firm.

Tailored to long-term needs, this type of financing has been the object of much criticism in the past. But terms are not necessarily sounder when they are shorter. With short-term loans, a contractor is apt to have much of his profit tied up in receivables, materials, retainages, and similar items, so that he cannot draw money from a bank account to pay for equipment in cash or on short terms. By fitting installment terms to a contractor's income, the

THE MEASURE OF SUPERIORITY IN-

GALION ROLL-O-MATIC TANDEM ROLLERS

A SIZE FOR EVERY NEED

10 to 14 Tons
8 to 12 Tons
8 to 10½ Tons
5 to 8 Tons
With ROLL-O-MATIC Drive

4 to 6 Tons
3 to 5 Tons
With Conventional Gear Shift Drive.

Write for literature.

● ROLL-O-MATIC DRIVE
A highly efficient combination of torque converter and automatic fluid transmission. Eliminates master clutch, gear shifting, shock load, and stalling. Increases life of working parts; reduces fuel consumption; enhances dependability and ease of operation. Available at no increase in price over gear-shift models.

● SUPER COMPACTION
Easily varied ballastable weight to obtain the greatest density and smoothest surface on any specific type of material.

● RUGGED DEPENDABILITY
Straight line spur gear final drive combines gradual gear reduction, low ratios, anti-friction roller bearings, and heat-treated alloy steel gears. It is your assurance of greatest strength, constant alignment, less wear and maintenance.

● EASE OF OPERATION
Dual controls, hydraulic steering, compact design, unobstructed visibility, and powerful engine. Velvet-smooth reversing action.

ESTABLISHED GALION 1907

MOTOR GRADERS · ROLLERS

TRENCH ROLLERS PORTABLE ROLLERS 3-WHEEL ROLLERS TANDEM ROLLERS MOTOR GRADERS

THE GALION IRON WORKS & MFG. CO., General and Export Offices, Galion, Ohio, U.S.A.
Cable address: GALIONIRON, Galion, Ohio

KIESLER Since 1892
2-LEVER ARM CLAM SHELL BUCKETS with POWER ON BOTH SHELLS
"A PAYLOAD EVERY TRIP"
The ONLY Bucket that DIGS-IN instead of Lifting-Out.
Write for literature
JOS. F. KIESLER COMPANY
934 W. HURON ST. CHICAGO 22, ILL.

creditor today permits a contractor to buy equipment from half a dozen suppliers, finance all his purchases through an industrial financing firm, and treat all the purchases as one transaction.

Before these operations of installment-financing firms were developed, a contractor needing equipment had a difficult time arranging for outside capital to finance his purchases. Just before World War II, a contractor

Paul B. Reinhold, president of Atlas Equipment Corp., Pittsburgh, Pa., and former president of the American Road Builders' Association.

who could not pay cash for needed machinery had to rely on the limited amount of credit available from either manufacturer or dealer.

This generally left him with several different debts and a variety of payment schedules. Credit terms offered did not always meet his needs, since they depended on whatever the seller was in a position to offer. At this time, almost all arrangements were made between a financing firm and either manufacturer or dealer. Maturities were relatively short term on construction machinery. In contrast to today's longer terms, they ran for about 12 or 24 months.

The contractor could also make a short-term loan—for 90 to 120 days—from a bank. But in this case, he was in effect borrowing money to buy capital assets. Often, a contractor impaired his credit by this type of borrowing. Credit should be kept intact for current, seasonal, or unforseen needs. An additional drawback was that a certain percentage of the borrowed money had to be left on deposit, tying up cash in costly idleness and depriving the contractor of working capital. The contractor could also make capital issues, but these are not suited to equipment financing. He could also get credit by using the services of an industrial financing company.

During this period, contractors generally depended on equipment makers for credit. Thus manufacturers were tying up money by extending credit to contractors and dealers, while also financing the manufacture of equipment. Gradually, equipment makers turned away from the practice of extending credit—for two reasons. Unit costs were rising, making production costs move higher. And the growing volume of construction work meant that increased production—at a high unit cost—was required. This made it virtually impossible for concerns to tie up considerable money in contractors' bills.

Distributors then had the job of handling installment paper for their customers. But these firms found themselves in the same position as the manufacturers. World War II, and the demand for bigger, faster, and more efficient machines, increased the financing problem. Prices rose steadily. A two-yard power shovel, selling for $26,500 in 1936, sold for $30,000 just before the war. When the war was over, production and competition increased, along with equipment prices, to make financing even more difficult. The same shovel selling for $30,000 just before the war now sold for $48,000. Today, the same equipment sells for $54,000, an increase of slightly more than 100 per cent over the 1936 price. All these factors played a part in forcing the distributor to find a better means of arranging for credit for contractors.

Contractors were being squeezed too. They, like the equipment manufacturer and seller, simply could not afford to tie up large sums of capital in equipment, particularly since prices had risen sharply during the previous decade.

The result was the turning to an outside source for the dollars needed to carry installment sales. Today, the industrial financing firm fills gaps left by the other methods of financing. Under the present system, distributors are left to sell equipment on a cash basis, manufacturers are permitted to concentrate on producing machinery, and the contractor is freed from unrealistic payment schedules.

THE END

From a recent address made before the Credit Association of Western Pennsylvania.

Model C-250
25 H.P. Optional
Self-Propelled.
A Clipper Model
to fit Every Budget
Priced from $395

NOW-SEE WHY
You Cut More Concrete
with
Clipper
CUTS RIGHT THRU
CONCRETE SAWS
--LOOK INSIDE
Behind Engine...
Under Frame...
for Famous...
CLIPPER QUALITY
plus 5 of the
EXCLUSIVE
FEATURES
THAT
GIVE YOU
LOWEST
CUTTING
COST
PER FOOT!

ASK FOR
FREE
DEMONSTRATION
ON YOUR JOB

Clipper BLADES For Best Results

- CLIPPER "GREENCON"
  Savings you never dreamed of—up to 80%! The original Reinforced Abrasive Blade that knifes through green concrete with aggregate of limestone, coral, or steel mill slag. "Try them on your next job."
- CLIPPER DIAMOND
  A Blade for any job—any aggregate—every saw! Choose your Clipper Diamond Blades from a wide variety of specifications to cut green or old concrete with outstanding speed and economy.

By the Makers of Clipper Masonry Saws

LOOK AT THESE 5 FEATURES
1. 4 Wheels with 3-Point No-Bind Blade Suspension
2. Self-Propelled with Abrasive-Coated Drive Wheels
3. Positive Screw Feed
4. Patented Water Application
5. Dashboard Controls

Send Coupon for the Whole Story

Clipper CUTS RIGHT THRU
KANSAS CITY, MO.

Better Mail the Coupon NOW!

Genuine Clipper Products Are Sold Only Direct. Immediate Shipment from Factory Branches in Principal Cities, Coast to Coast. Mail Coupon for Same-Day Service.

CLIPPER MANUFACTURING CO.
2825 S. Warwick • Kansas City 8, Mo.

☐ I want a FREE DEMONSTRATION of a Clipper Concrete Saw.
☐ Send FREE Literature on Clipper Concrete Saws and Blades.
☐ Send FREE Literature on Clipper Masonry Saws and Blades. 403X
☐ Have a Clipper representative call on me.

Name .....
Address .....
City ..... State .....

MONEY

This is the third in a series of articles consisting of selected excerpts from the 1,280-page book, "Moving the Earth", by Herbert L. Nichols, Jr., published in March. Priced at $15, the book is available through the Book Order Department of CONTRACTORS AND ENGINEERS, 470 Fourth Ave., New York 16, N. Y. A copy may be ordered on approval by circling No. 1 on the Request Card at page 18. Approval copies will be billed at $15 plus postage.

Herbert L. Nichols, Jr.

Making vs. losing money

Contractors' costs may be difficult to classify, but a rough division into capital investment, fixed or overhead costs, and operating expenses is convenient.

Capital investment includes investment by the owner or owners of their cash or borrowings in working capital, machinery, office and field buildings, processing plants, land, stocks of material, mining rights, right-of-ways, and similar items.

Overhead is made up of costs which do not vary immediately or directly with the volume or type of work. It may include the following items:

Drawing accounts, or living expenses, of owner or partners; management and supervision—salaries of executives, superintendents, and foreman; office rent, payroll, and supplies; interest paid on loans, or charged against capital investment; insurance for fire, theft, and liability, if paid on the ownership of equipment and premises; ownership taxes on land, equipment, and other capital assets; depreciation.

Operation costs include: The field payroll of employees hired by the hour or day, or for the job; payroll taxes; liability and compensation insurance based on payroll, work, volume, or job conditions; machinery fuel, lubrication, maintenance, and repair; machinery rental, delivery, and the expense involved in changing rigs; expendable supplies.

Machinery costs

Equipment cost should be figured in two ways—total expenditure involved in buying the machine and starting work, and cost of ownership and operation during its useful life. These are different ways of looking at the same thing and should never be added together.

The expenditure is the important figure to the contractor with limited capital, but may be merely a factor in considering long term costs for the large operator.

Care should be taken to include in the purchase price all expenses involved. These may include list price, delivery to the freight station, and perhaps then to the job or yard; accessories such as cabs, lights, spare tires, parts, and special tools; repairs

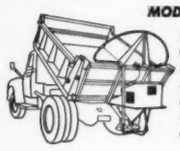
MODEL J
Enables you to work close to buildings, driveways, narrow alleys, etc.

HI-WAY SPREADERS SPEED
SEAL COATING OPERATIONS

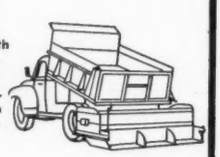
4 MODELS TO MEET ALL REQUIREMENTS! NEW FEATURES YOU'VE BEEN LOOKING FOR!

HI-WAY Spreaders—with their exclusive combination of engineering features—help you do those *Seal Coating* jobs faster . . . Better! Before you make any Spreader purchase, *be sure* you have the facts on these features of HI-WAY Spreaders.

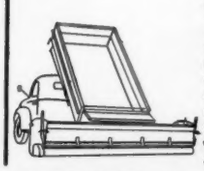
- Forward and Reverse spreading
- Adjustable width spreads
- Volume controlled by feedgate
- Positive drive—metered spread
- No free flowing—eliminates waste
- Spreads all granular materials
- Simple one-man operation
- Quickly attached and detached
- No controls to install in truck cab
- Interchangeability with different dump bodies



MODEL DD
Can be attached and detached in one minute affording its use with several trucks.



MODEL AS
Equipped with hydraulically operated shutoff gate. Spreads from ½" to 4" in depth.



MODEL R
Spreads forward or reverse with control of material flow. Has worldwide acceptance.

WRITE for FULL INFORMATION and your HI-WAY DEALER'S NAME

HIGHWAY EQUIPMENT CO., Inc.
616 D Ave., N.W., Cedar Rapids, Iowa

Manufacturers of The World's Most Complete Line of Spreaders and Bulk Material Delivery Equipment

THE BEST SLIPFORM METHOD—HERE'S WHY:

The "Concretor" Hydraulic Jack Unit

Simple: One man, at pump, controls any number of jacks—all synchronized for safer, steadier form-raising.

Complete: You build form; we send everything else direct to job—jacks, yokes, pumps, pipe and connections, even jack-rods, at all-inclusive rental cost. Field engineers available to supervise.

Adaptable to any common wall thickness to 18". Designed to help place reinforcing.

Successfully used for
Mills
Water Towers
Apartment Houses
Silos
Bridge Pillars
Factories
Mine Shafts
Plants, Etc.

The hydraulic method is tried and proven. Write for facts today.

ECONOMICAL DEPENDABLE COMPLETE FROM A TO Z
"Concretor" Hydraulic Jack Method

B. M. HEEDE, Inc., 30-01 37th Ave., Long Island City 1, N. Y.

or alterations necessary immediately; allied equipment required to get full use of the machine; and finance charges in excess of normal interest rates.

"Worthwhile savings can be obtained by tailoring liability insurance coverage to fit each job. Hence the need for close contact between the contractor and his insurance company to make certain the best rate is obtained that is consistent with the hazards of the job in hand."
—H. E. Beaven, Engineering Dept., American Mutual Liability Insurance Co., Boston, Mass.

Ownership—what it costs to own the machine aside from the expenses of operating it—may be figured on an hourly, daily, monthly, or annual basis, or over the whole expected life. Usually, it is figured on an annual or whole-life study, then divided into shorter periods.

Depreciation should be included. This is the original cost of the unit divided by the time it should work. According to the Internal Revenue Department most construction machinery is worn out or obsolete in 3 to 6 years, and depreciation may be calculated accordingly. On the other hand, it may be that the contractor is accustomed to using the type of machine he is buying for 10 to 30 years, and will wish to figure on that basis.

Some foreign governments rule that a machine depreciates each year by one-third of its value at the beginning of that year. Several methods of computing depreciation are now authorized by the U. S. Treasury Department.

Operating

The cost of operating a particular machine is made up of operator's pay, fuel, lubrication, and repairs.

Pay should be figured to include payroll taxes; pensions; cost of or loss on board, lodging, transportation, and other extras; and liability and compensation insurance based on payroll.

Fuel consumption varies, but is usually figured on an average basis. A big machine takes more fuel than a small one, and hard work requires more than light jobs. Gas engines use more fuel and higher priced fuel than diesels. Proper engine maintenance will keep fuel bills down. Careful maintenance increases lubrication costs, but they are saved many times over in reduced repairs. A rule of thumb which can be used unless there is evidence to the contrary is that lubricants, and the labor of using

(*Continued on next page*)

◄ "Careful maintenance increases lubrication costs, but they are saved many times over in reduced repairs."

1 man
erects this
40 foot
HOISTING
TOWER in
23 minutes!
Because it's self-erecting, one man, working alone, can set up the BUCK Heavy Duty Hoisting Machine, ready for action, in only 23 minutes. Compare this with the number of men you are using!
BUCK
HEAVY-DUTY
HOISTING MACHINE
Check these money-saving BUCK features!
Portable, self-erecting, rugged and safe.
Saves money over other hoists and old-fashioned hodding methods.
Permits hoist use on smaller jobs where hoisting costs were formerly prohibitive.
Unloads at any height to 40'. Easy-to-add sections provide additional height.
Raises 1 ton loads
Choice of gas or electric; truck or trailer-mounted units.
Tow it right to the jobsite
Write for complete information and price quotation
BUCK
EQUIPMENT CORP.
208 BUTLER STREET • CINCINNATI 2, OHIO
Some desirable territories open to dealers . . . Write for details.

McKiernan-Terry Hammer driving the first concrete pile at the Terminal de Pasajeros in La Guaira, Venezuela. Frederick Snare Corporation, Contractors.

Four McKiernan-Terry Type S-8 Single-Acting Pile Hammers were used to drive 4940 concrete and steel piles on this important project . . . making a typically perfect McKiernan-Terry record • Three of the hammers drove a total of 4000 18-inch square concrete piles, of 57-ft. average length. A fourth S-8 hammer drove 940 14-inch steel H-piles averaging 53-ft. in length • The report on this job states: "The performance of these hammers was excellent. All piles were driven to 63 tons bearing capacity, no mechanical difficulties were ever experienced with any of the hammers, and no repair parts had to be ordered." • Upon completion of the job, all four McKiernan-Terry Hammers were still in excellent condition, capable of a lot more work without requiring attention • This performance record illustrates why so many contractors choose McKiernan-Terry Pile Hammers for speedy, accurate and economical pile driving. 11 Double-acting hammers, 5 single-acting hammers and 2 extractors are available in the complete McKiernan-Terry line. Write for bulletin giving full data.

McKIERNAN TERRY

McKIERNAN-TERRY CORPORATION, MANUFACTURING ENGINEERS
82 RICHARDS AVE., DOVER, N. J. Plants: Harrison, N. J., Dover, N. J.

(Continued from preceding page)

them, amount to 50 per cent of fuel cost.

Repairs include maintenance items, such as cables, hydraulic hose, filters, tires, and blade edges, as well as field repairs and complete overhauls. These vary greatly among different types and makes of machines, and with the type of work, the treatment the machine receives, and luck. The rule of thumb is that over the life of the machine they will equal its first cost.

In general, it is profitable to work large machines overtime, as the extra wages are more than offset by the drop in hourly ownership costs caused by spreading them over a greater number of hours. Small machines may show increased or reduced profits.

Night work is less efficient than day work because of the need for artificial light, and the lessened accuracy and usually lower mental and physical vigor of the men. Night grading is also very destructive of stakes.

"In the final analysis, success in this business (heavy construction) depends on the quality of management as it relates to a thousand and one continually varying aspects . . . substantial rewards are reserved for those with reasonable capital, seasoned experience, and management ability of a high order."
—Guy C. Kidoo, Vice President, First National Bank, Chicago, Ill.

Overtime work with labor, supervisors, and other personnel ordinarily results in a loss, as the profit figured on a payroll is likely to be between 15 and 25 per cent, as against the 50 per cent increase in pay rate.

When work is being done on a fixed-price contract, or at a fixed hourly rate, overtime costs must be carefully watched. If the work is on a basis of cost plus a fixed fee, overtime will merely require a larger investment to obtain the same profit. If payment is cost plus a percentage of cost, overtime, as well as any other extra expenses, will increase the contractor's profit.

Estimating

A contractor is usually called upon to estimate the time, material, and expense involved in a piece of work. This estimate may involve careful calculation of all factors; may be made up from records of similar work, or the memory of them; or, in bidding on a small proposition, be only an informed guess.

An estimate may be used as a basis for making a fixed-price bid, or simply to give the customer an idea of cost while performing the work on an hourly or cost-plus basis.

A large proportion of excavation is done under contract calling for a fixed payment for certain specified work. Provision may also be made for increased payment for certain difficulties which may arise in doing the work, or for additional work not in the contract.

The lump-sum type of contract is suitable for jobs where all the important factors which will affect the work are known. Under suitable circumstances, this is the most satisfactory type of contract. It relieves the contractor of considerable measurement, classification, timekeeping, and bookkeeping, and relieves the customer of the necessity of watching the contractor's every move. Inspection is still required, however, to assure cuts to proper dimensions, accurate grades, and proper construction, compaction, and finishing where specified.

Excavation contracts are often let on a basis of a fixed price per yard for each of two or more classes of digging. The most usual division is into dirt (material which can be dug fairly readily by the size shovel normally used in such work) and rock (material which requires blasting before digging). This classification may put clay formations in the rock class and rotten rock in the dirt category, but in general, it is fairer than classifying by geologic structure.

When important conditions of the job are unknown, the contract may be made on a cost-plus basis. The contractor will then have all his costs in doing the work repaid, and will receive either a fixed fee or a percentage of his costs in addition. This type of contract is most often let in government or other work where haste prevents thorough investigation of the site or plans are subject to change during operations.

A serious cost-plus difficulty is that it is apt to lead the customer to interfere with the contractor's policies and management on the job. This effort to lower costs is liable to be of the penny-wise pound-foolish variety, and increases expenses more often than it reduces them.

Machinery selection

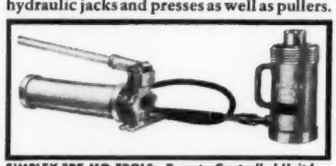
Purchase of a machine—whether new or used—involves consideration of the type and amount of work in hand and expected, price and availability of suitable models, and such pertinent aspects as operator skills, work habits, and personal preference.

The arguments about machine size can be appropriately restated here. A big excavator is more costly to buy and to move, and requires more working space. It will dig more dirt in a

Cables in concrete "I" beam are stressed to pre-determined tension by 60-ton Simplex "Jenny" Hydraulic Puller equipped with pressure indicating gauge.

Hydraulic Puller Prestresses Concrete Faster, Safer, Easier

"Center-Hole" pulling, an exclusive feature in Simplex Pullers, has simplified prestressing jobs, according to concrete construction men. The "Center-Hole" construction of the Puller, they explain, permits tensioning cables or rods to be drawn through the center of the tubular ram. This eliminates torque, dangerous off-center pressures and complicated back-up devices—actually makes pulling 75% easier. The Simplex "Jenny," illustrated above, is a self-contained unit which serves as its own back-up or can be used with a simple chair, reducing set-up time. Simplex "Center-Hole" Pullers are available in capacities from 30 to 100-tons and in self-contained or remote controlled units. They may also be used as powerful hydraulic jacks and presses as well as pullers.



SIMPLEX "RE-MO-TROL"—Remote-Controlled Unit has ram connected to hydraulic pump by high pressure hose for safe, convenient use in tight spots and dangerous locations. A pressure gauge may be installed for checking tensioning pressure.

FREE BULLETIN SHOWS HOW

Illustrates application of all models of Simplex Hydraulic "Jenny" and "Re-Mo-Trol" Pullers for prestressing concrete and for other construction uses. Write for copy of Hydraulic 53.

WORLD'S LARGEST MFGRS. OF INDUSTRIAL MECHANICAL AND HYDRAULIC JACKS

SIMPLEX JACKS

RE-MO-TROL UTIL-A-TOOL JENNY ROL-TOR

TEMPLETON, KENLY & CO. 2511 Gardner Road, Broadview, Illinois

POSITIVE SOIL TESTING
CHECK UNDERGROUND SOIL CONDITIONS . . .
THE STERLING WAY!

"STERLING" Hydraulic controlled earth boring machines are precision engineered . . . rugged in construction . . . give maximum service . . . low maintenance cost.

Samples can be recovered at any depth. Positive hydraulic pressure facilitates the use of undisturbed sample tubes after the hole is drilled to the desired depth.

Diameters of 6" to 16" are common, with larger diameters possible.

Twenty foot depths can be reached without changing augers. Greater depths are possible when continuous helix augers are used after the twenty foot depth is reached.

Separation of full horse power between rotary motion and downward pressure makes the Sterling earth boring machine ideal for use in rocky types of soil.

Compare the features of the Sterling Earth Boring Machine with any other . . . you'll agree it out-performs them all for economy of operation, versatility and ruggedness.

SEND FOR BULLETIN GAA 2

WYOMING VALLEY EQUIPMENT DIV.
714 WYOMING AVENUE
KINGSTON, PA. Phone BUtler 7-3158

Rolatape THE MODERN, MOBILE MEASURING INSTRUMENT

FOR LOW-COST, ACCURATE MEASURING

Model "400"

MODEL "400" This Model is a favorite and is widely used by Telephone Companies and other Utilities, paving contractors, land appraisers, etc. It's four-foot circumference measuring wheel makes it most suitable for measuring fairly rough terrain. Automatic measuring counter can be reset at any distance. Folds compactly.

MODEL "200" A popular Model for interior and exterior use. Tabulates wall-to-wall, vertical, or a 101 other measuring assignments. Folds compactly for kit or glove compartment.

MODEL "600" For cross country acreage measurement and work on rougher terrain.

NOTE—All Rolatape Models are designed to tabulate accurate measurements, and are constructed for long and dependable service. With Rolatape, you measure as you walk.

FOR COMPLETE ROLATAPE INFORMATION AND PRICES PLEASE WRITE

ROLATAPE, INC.
1741 14th Street, Santa Monica, Calif.
OR SEE YOUR LOCAL DEALER

given time, will handle harder and coarser formations, and will show a lower cost per yard if it has space to work, and is teamed with other equipment of proper size. It is harder to service and repair because of volume of fuel and lubricants used, and weight of parts. It gets stuck more easily and seriously in soft spots, but seldom hangs up on rough ground.

Some successful contractors buy nothing but new equipment, while others buy only used pieces. In general a new machine will have less mechanical trouble, and will receive better service from the dealer. It is more costly in purchase price, and in percentage of loss when sold. It has advertising or prestige value. It may be difficult or impossible to secure in the make, size, and model wanted within a reasonable time.

A purchaser of used equipment should have a good knowledge of mechanical condition and current values, and must be alert for liquidations and other forced sales where good values can be obtained. Considerable time may be required to find a particular make and model at a good price, and haste may make it necessary to pay too much. On the average, repairs will be more costly and service less satisfactory than on new units.

The expert buyer of used machinery is often able to sell his purchases at a profit, sometimes obtaining considerable work from them first. The average buyer, however, will seldom accomplish this.

Causes of failure

Every year many excavating and general contractors fail, or sustain losses that force them to operate on a reduced scale or give up entirely. Most of the failures arise from one or more of the following causes:

Unforeseen price rises
Abnormal labor costs
Abnormal equipment breakage
Death or disability of owner or key men
Fire not adequately insured
Liability or property damage not adequately insured
Poor accident record
Failure of subcontractors
Adverse weather
Unforeseen subsurface difficulties
Faulty credit judgment
Sudden restriction or withdrawal of credit
Unavailability of materials
Taking on too much work for financial resources
Taking on too much work for adequate supervision
Speculation
Diversion of funds to non-business use
Embezzlement by employees

Some of these subjects have been discussed previously, others are of general business nature and are too complex for discussion here.

A subject of particular importance to the excavator, however, is insurance.

There are two types of insurance. One protects property owned by the insured, so he is paid if it is damaged or lost. The other protects him against claims for damage to other people because of his negligence. They are both important, but the second much more so than the first.

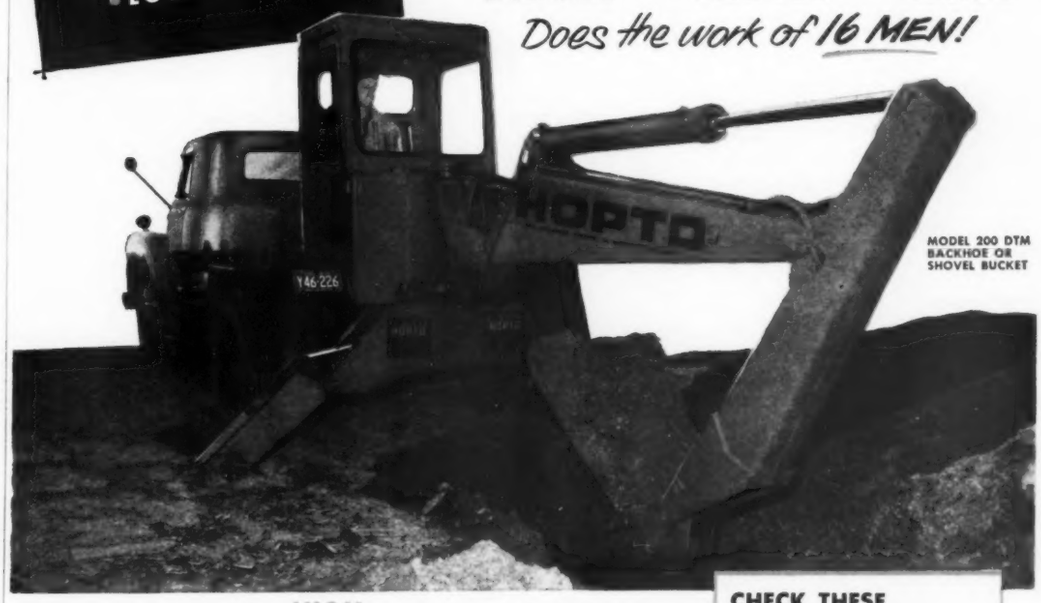
To protect his own property, a contractor should have fire insurance on his buildings and their contents, and separate all-risk "floater" insurance on his equipment. Cars and trucks may be covered under the floater, or under separate motor vehicle policies for fire, theft, collision, and other damages.

A good tool and equipment floater policy will protect a contractor against most damages to the machines—fire, theft, tornado, upset, and collapse of bridges. But riot, vandalism, malicious mischief, and "loss while waterborne" are probably included only if an extra premium is paid.

Workmen's compensation insurance, required of employers by law in practically all states, and by common sense and self interest in all of them, pays medical expenses, part wages (as disability benefits), and damages to employees injured on the job. Usually there is a period of time, such as a week, in which compensation pays

• HYDRAULIC
• MOBILE
• LOW-COST

HOPTO
DIGGER • SHOVEL • CRANE
Does the work of 16 MEN!



MODEL 200 DTM BACKHOE OR SHOVEL BUCKET

digs DEEP... lifts HIGH... easy to operate!

Here's the fast-cycling HOPTO unit that equips you to profitably handle more jobs at lower equipment investment! The completely hydraulic HOPTO mounts on any 1½ ton or larger truck . . . one that may have been 'written off' but can still serve as a mobile base for this work-hungry, big-capacity unit!

Four simple and easily mastered control levers give finger-tip operation that is fatigue-free. That means more work done *more safely!* Retractable hydraulically operated outriggers quickly level unit . . . provide a solid, *safe* base from which to operate.

OTHER MODELS

From the large track-type continuous Badger Trencher down to the trailer-type HOPTO, Badger manufactures a complete quality line of digging equipment. HOPTO is also available as a power take-off operated or self-powered trailer model, as a unit for rear mounting on track-type or wheel-type tractors, as a complete self-powered wheel unit, the crawler unit shown below, the truck mounted unit illustrated above and a slightly smaller unit for truck mounting. HOPTO builds a *quality* unit to meet *your* needs, *exceed your expectations.*

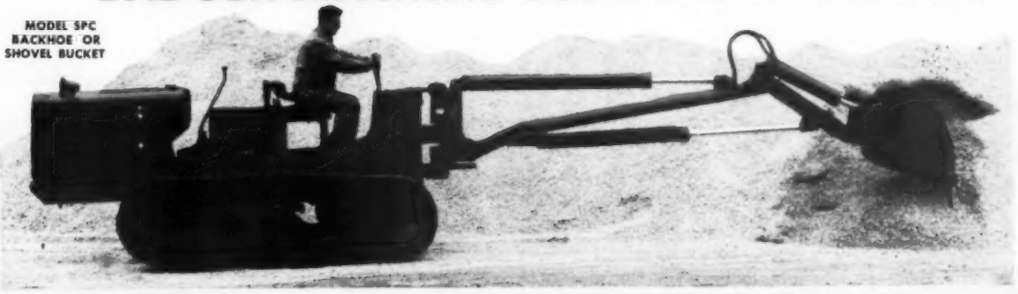
CHECK THESE HOPTO FEATURES

- Dipper stick extension tilts digging unit 135°; permits straight side, vertical digging. Eliminates hand work.
- Digs 11½' below surface.
- Lifts 13½' high with shovel bucket; more than 9' with backhoe.
- Alloyed steel hardened pins and self-aligning bearings at all pivot points.
- Variety of widths and types of backhoes and shovel buckets.
- Backhoes and shovel buckets have H & L teeth.

WRITE FOR FREE FOLDER!

BADGER MACHINE CO. DEPT. E, WINONA, MINN.

MODEL 5PC BACKHOE OR SHOVEL BUCKET



CUT RAKING LABOR 75%
on Landscaping Projects with a PIXTONE
MECHANICAL STONEPICKER

Photo shows where PIXTONE made one pass thru a stony field.

Landscaping jobs can be greatly accelerated when stones are removed with a PIXTONE. Pixtone picks up, carries, dumps stones 1½" to 5" in diameter—clears as much as one-half to one acre per hour. Pulled by any 2-plow tractor—no power take-off required. Saves bulk of raking time in preparing for seeding along new highways, around schools and other buildings, parks, airports, athletic fields, etc. Hundreds in use.

Write or phone for descriptive literature and specifications

Bridgeport Implement Works, Inc.
Dept. E, Stratford, Conn.
Telephone: Bridgeport Edison 7-3317

no wages unless the disability extends over a longer period. There may also be gradations from partial to full compensation for time lost as the no-work period lengthens.

Premiums are based on the type of work and the amount of the payroll. Rates and requirements differ in various states, and a contractor working across state lines must take care to see that he is covered on both sides.

There are a number of classifications of liability risks for the contractor that can be insured separately. It is good business to lump as many as possible in a comprehensive policy, to avoid extra payments on overlapping coverage, and to avoid confusion.

Bonds

The excavating contractor shares with other forms of business the danger of serious loss through dishonesty of an employee or employees. For a contractor, the loss is as likely to be in property taken or sold "over the fence" as in money.

Fidelity bonds of various types are available for protection against losses of this nature.

Three types of bonds may be involved. The first, the bid bond, accompanies a bid or proposal on a job, and guarantees that if the bidder is given the job, he will enter into a formal contract to complete it, and will supply bonds to complete the contract.

The bond supplied for the work itself is actually made up of two bonds, which are separate but seldom if ever written separately. One is a Performance Bond, covering fulfillment of the contract, the other a Labor and Material Payment Bond, guaranteeing payment to personnel, suppliers, and subcontractors.

These last two are drawn separately so that no question of priority can arise when claims are presented by both the owner and those who have supplied service and materials. In the early days of bonding, the government had to be paid or satisfied first, and the others got what was left. This meant at least long delays, and in cases where the bond was too small, losses for the small claimants.

In order to obtain a bond, a contractor must convince the company that he is competent to do the job, and financially able to carry it. He pays the premium, usually not over 1 per cent of the contract price, figures it as part of his costs, and passes it on to the owner in his bid or estimate.

Substantial all-around benefits are obtained from writing of bonds. The owner is able to save money—often a lot of it—by letting the contract to the lowest bidder, whom he might not trust with the job if a surety company did not guarantee performance. The contractor saves money by driving hard bargains with the subcontractors, who cut their figures a little closer because they know they will be paid.

(To be continued next month)

Let's roll up our sleeves today and give to the Red Cross Blood Bank.

Mechanical brush disposal with the Fitchburg chipper eliminates hauling and burning, saving an appreciable number of man hours of work.

Chipping machine provides easy brush disposal

■ A wood chipper that reduces anything from brush to 14-inch-wide lumber to small easily disposable chips is manufactured by Fitchburg Engineering Corp., Fitchburg, Mass.

Available in five sizes, the chipper is furnished in trailer-mounted models and also in units designed for installation on tractors or trucks.

Brush fed into the Fitchburg chipper is pulled in by a specially-designed chipping knife. After reducing the brush to finely chopped wood, the

COMPLETE

3-WHEELED ROLLERS

NEW **Torque Converter Drive** . . . smooth, powerful
NEW **Variable Weight** . . . water or wet sand ballast
NEW **Visibility** . . . with low center of gravity, and high ground clearance
NEW **Gasoline or Diesel Engines** . . . 2-speed or 4-speed transmissions
NEW **Torque Proportioning Differential** . . . maintains traction under difficult conditions
NEW **Accessibility** . . . servicing all assemblies is quick and easy

No. 1 feature of this brand new line of 3-wheeled rollers is Torque Converter Drive which controls power automatically, increases the life of power unit and clutches, cushions the reversing action, and provides an infinite number of speeds. In every detail, these machines are engineered and constructed to provide the superb, trouble-free performance that has characterized A-W 3-wheeled rollers through the years since Austin built America's first motor road roller in 1907. Made in 5-7, 6-8, 7-10, 8-11, 10-12 and 12-14 ton sizes.

Austin-Western
Power Graders · Motor Sweepers
Road Rollers · Hydraulic Cranes
Construction Equipment Division

BALDWIN BLH LIMA-HAMILTON

Manufactured by
AUSTIN-WESTERN COMPAN
Subsidiary of Baldwin-Lima-Hamilton Corpora
AURORA, ILLINOIS, U.S.

machine blows the chips out at high velocity to the edge of the roadside right-of-way.

With this method the rate of brush disposal is reported to be fast enough to keep debris cleared up behind a crew of 30 men. Unsightly brush dumps are eliminated, and, along with them, the danger of brush fires. Economical to operate, the machine is run by a crew of two and consumes about 5 gallons of gasoline in a day's work.

For further information write to the company, or use the Request Card at page 18. Circle No. 81.

Mobile crawler-mounted drill carrier provides stable support on rocky ground

■ Superior to the conventional wheel-mounted wagon drill carriage when used on steep terrain or rocky drilling sites, the new Gardner-Denver Air Trac self-propelled drill carrier offers the advantages of crawler mounting.

The Air Trac consists of a hydraulically actuated T-bar mounted on two self-propelled crawler treads, each powered by a Gardner-Denver air motor. Traction power developed is sufficient to haul an 11,720-pound compressor up a 10 per cent grade. The T-bar supports a Gardner-Denver chain feed and rock drill.

The T-bar, which controls the height of the chain feed, is positioned by a hydraulic hand pump that actuates two lift cylinders. Once the T-bar is positioned and the hydraulic mechanism is locked, the T-bar position is self-equalizing and load distribution on the two crawler tracks is self-stabilizing, even though one track may be tilted up while the other is tilted down.

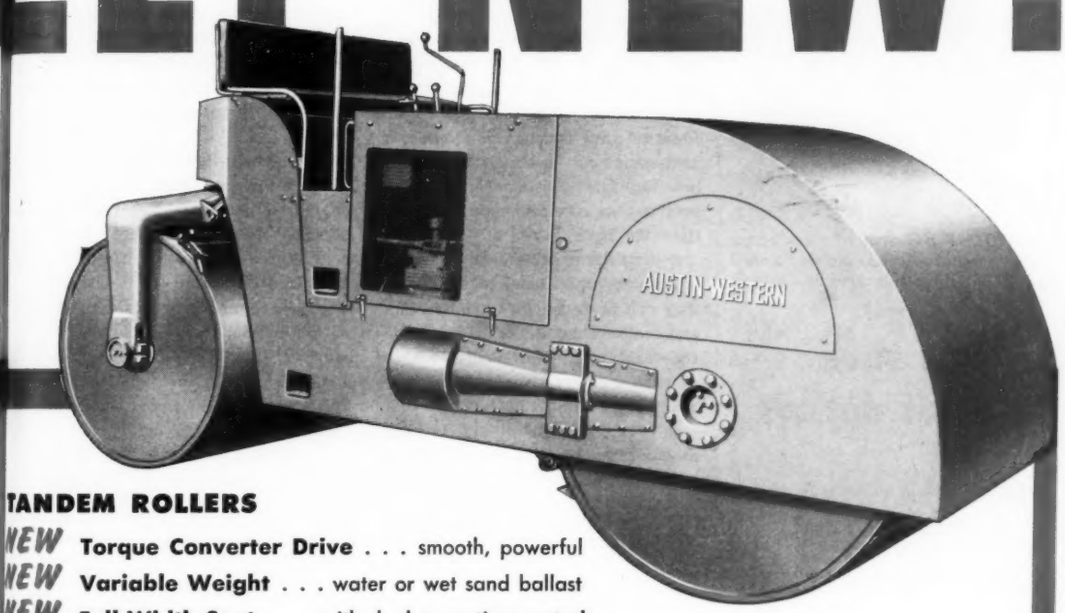
Gardner-Denver's new Air Trac drill carrier gives drilling equipment a stable footing on rocky terrain.

The mobility of the Air Trac enables the operator to spot holes quickly and accurately. In addition, the exceptional stability of the T-bar increases drilling efficiency, especially when drilling long holes with Gardner-Denver deep hole drills, Ring Seal shank, and sectional rods and couplings.

The T-bar swings through a vertical arc of 86½ degrees, providing accurate lineup for vertical holes, angle holes, or toe holes.

For further information write to Gardner-Denver Co., Quincy, Ill., or use the Request Card at page 18. Circle No. 126.

ELY NEW!



TANDEM ROLLERS

NEW **Torque Converter Drive** . . . smooth, powerful
NEW **Variable Weight** . . . water or wet sand ballast
NEW **Full-Width Seat** . . . with dual operating controls
NEW **Visibility** . . . with low center of gravity, and high ground clearance
NEW **Gasoline or Diesel Engines** . . . 2-speed or 4-speed transmissions
NEW **Accessibility** . . . servicing all assemblies is quick and easy

While the Torque Converter Drive described on the opposite page is probably their most important feature, this new line of tandem rollers incorporates many other refinements designed to provide exceptionally smooth performance on precision jobs. Modern industrial engines furnish a smooth flow of steady power; uniform weight distribution eliminates side sway; effortless hydraulic power is used for steering . . . such features are your assurance of dependable, low-cost service. Available in 5-8, 8-12 and 10-14 ton sizes.

Get all the Facts ...

AUSTIN-WESTERN COMPANY
629 Farnsworth Avenue, Aurora, Illinois
Please send complete information and literature on Austin-Western Rollers

Name .....
Title .....
Company .....
Street .....

Engineer corps lists openings in New York

A number of position vacancies on engineering and construction projects in and around the metropolitan New York area have been announced by the New York District of the U. S. Army Corps of Engineers.

Vacant positions in New York City, almost all of which pay $5,000 a year or more, include architectural, structural, hydraulic, civil, materials, and construction management engineers. Construction engineers ($5,060 to $5,940 a year) also are needed at Rome, Utica, Plum Island, Plattsburgh, and West Point, N. Y.

Civil engineering aids, salaried at $3,410 to $4,205 a year, are needed at Cornell, Elmira, Hempstead, and Plattsburgh, N. Y., and Hackensack, N. J. Construction inspectors, paid $4,205 a year, are needed at Syracuse, Plattsburgh, and West Point.

Mechanical, electrical, and materials engineers ($5,060 to $5,940 a year), as well as construction, mechanical, and electrical inspectors, ($4,205 a year), also are needed at Plattsburgh.

Interested applicants should inquire at the New York District's Personnel Branch, 9th floor, 111 E. 16th St., New York 3, N. Y.

The reliable auctioneer advertises—without exaggeration—only pieces of machinery he intends to sell. On the day of the sale, all the equipment is displayed so as to permit full inspection by prospective buyers.

MONEY

Used equipment sales

The increasing popularity of construction machinery auctions, as well as a growing awareness of the significant role they play in determining the market value of used equipment, has focused industry-wide attention on this quick-disposal type of sale.

Unfortunately, the reputation they have earned has not always been a good one.

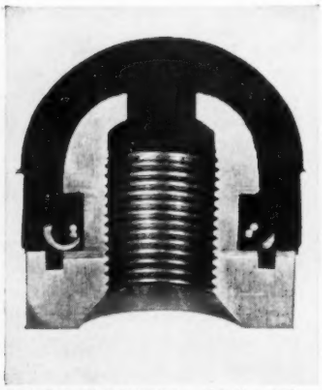
In recent years, there has been considerable discussion and controversy over the results of equipment auctions. Articles in construction and dealer publications have reported such sales over the country—often comparing two auctions in an effort to draw conclusions about the used-equipment market. Generally, however, the questionable type of auction has received more publicity than the honest one.

Construction equipment auctions undoubtedly are here to stay, and they can be beneficial to contractors and dealers alike. But it is imperative that contractors and dealers realize there is a difference in auctions and a difference in auctioneers. The success of an auction on any market, at any given time, is related directly to the method of conducting the sale—from the initial advertising to the final settlement.

There have evolved two basically different ways in which construction machinery sales are conducted. The one type of auction is advertised with much ballyhoo generally exaggerating both the amount and condition of equipment. The sale is conducted with considerable confusion, and only a small percentage of the equipment is actually sold. The advertising is usually bannered with phrases such as "the largest ever held," "tremendous sale," and "millions of dollars' worth." The equipment is always "the finest" or "in top condition."

At one sale, a dealer publication reported, "over 100" graders were advertised for sale, but only 17 were offered. Other units were similarly overadvertised. At another "tremendous" three-day auction, the second and third days were spent trying to sell the equipment that had supposedly been sold the first day. At still another sale, the auctioneer had lights rigged up for signals in the room where the sale was being conducted.

What kind of results can be expected from auctions such as these?



TOUGH, LIVE RUBBER molded on Viber replaceable tip prevents vibrator damage to costly forms.

COILED SPRING around steel base firmly anchors rubber molded completely through and around tip.

Replaceable rubber tips save contractors thousands of dollars

Progressive contractors save thousands of dollars by using rubber tipped vibrators to eliminate damage to forms of plywood and other expensive materials. This means longer form life and less cleanup time. Another important saving is longer housing life because the housing is subject to very little wear, and the tip (where most wear occurs) may be replaced when necessary.

Five years of successful field experience have proved that VIBER'S exclusive patented replaceable rubber tips will stand up under rigorous field conditions. As the result of such experiences, leading contractors like the Robert E. McKee Company have standardized on and use rubber tipped vibrators.

Features Simple Design

Simple design of Viber's patented replaceable tip combines a machined steel base and a molded rubber body. The base, as illustrated above, provides a positive attachment and mechanical interlocking of two parts. This prevents any possibility of the rubber coming off in the field until it is literally torn and shredded away by reinforcing steel or the abrasive action of the concrete itself.

The machined steel base screws directly on the lower end of the housing. It is designed with the same outside diameter as the housing, so the complete assembly is perfectly smooth and will not catch or hang up in the form.

The vibrator does not lose any effectiveness when the rubber finally wears off, since vibration comes from the sides of the housing. Replacement of tip requires only long enough to unscrew the old tip and screw on a new one.

Viber Leads The Field

These patented replaceable rubber tips are another example of the progressive design and planning which keeps Viber a leader in the field of vibration. For information on Viber's complete line of internal and external vibrators, contact your authorized distributor or VIBER COMPANY, 726 South Flower Street, Burbank, California. Dept. 77.

VIBER HOUSINGS LAST two to four times longer because of replaceable rubber tip, which screws on end of housing where most wear occurs. Rubber tip vibrators are available from 1-15/16 into to 3 inch diameter.

VIBER CO.

CONCRETE VIBRATORS SINCE 1931

Stand By...! for the New Lightweight HAMCO Power-Packed Generator!
Contractors!
Ready to Go - Anywhere!
Here is a new, rugged, lightweight line of generators, low priced and practically free from maintenance costs. Units from 1.2 to 10KW. We have the generator to fit your needs! Write Hamco for complete details today!
Model 350-D 3500 Watts
115/230 Volts AC 60 cycle
33⅓% Lighter and Smaller!
Use of modern metals tremendously increases portability of the new Hamco 350-D. And it's power-packed! 3500 watt continuous duty generator starts 5000 watts! AC-DC circuits filtered to minimize radio, TV interference. Long brush and commutator life. We make the generator complete in our modern plant.
SOME OTHER FEATURES:
• 8 H.P. Briggs & Stratton 4 cycle Engine, shock mounted.
• Double V-Belt Drive.
• Drip-proof generator.
• Shielded ignition.
• Voltmeter.
Write now for complete specifications
A few choice distributor areas still available.
Hamco
"POWER WHEN YOU NEED IT"
HAMDEN MACHINE PRODUCTS, INC.
44 KENDALL ST., NEW HAVEN, CONN.

...r play or fraud?

Don't judge all auctions by the dishonest ones that always seem to steal the limelight

What could be expected from an auction which advertised that over 100 graders would be sold and then only a fraction of them were actually present? This type of thing is too big to be passed off as a mere error. It is obvious what is being attempted by the use of these practises.

The honest sale

The other type of auction is honestly advertised, the equipment is all listed, the sale is well conducted, and all pieces are sold to the highest bidder. These auctions are usually conducted for one contractor or one dealer. Some of the consignment-type auctions also fall into this category, as here everything is out in the open and aboveboard. The advertising is commensurate with the size of the sale. Free lists are sent out with each piece listed as to type, model, serial number, and—as nearly as possible—correct condition. When prospective buyers attend the sale, they find all of the equipment present and as represented in the advertising.

Of course some mistakes will occur, but it is usually apparent that the seller and the auctioneers have conscientiously done their best. The sale is started promptly and is moved rapidly, with all possible knowledge freely given to bidders for their help. Each piece is sold—without help from "by bidders," "shills," or other "plants." The sale from beginning to the final settlement is handled as any legitimate business transaction should be. There have been quite a number of these auctions and it seems that the results have been satisfactory to sellers, contractors, and dealers.

At a questionable auction the auctioneer will probably have a price list in front of him with the "must" price or no sale limit for each piece. The auctioneer will start a piece just below or at the "must" price, hoping and waiting for an actual bid. If the legitimate or actual bid never comes in—and often under these circumstances it does not—the auctioneer sells to a fictitious buyer and goes to the next piece.

The construction machinery market is basically the same throughout the country, give or take a little for different regions or localities. This market is made by the men purchasing equipment, not the sellers. For the seller to receive market prices for his equipment these prospective buyers must have trust and confidence in the auctioneers. This can only be accomplished when an auction is conducted, from beginning to end, as any legitimate transaction should be. If these men know or see that the advertising is honest, and that the bidding is open with pieces actually sold, the majority will freely bid their judgment.

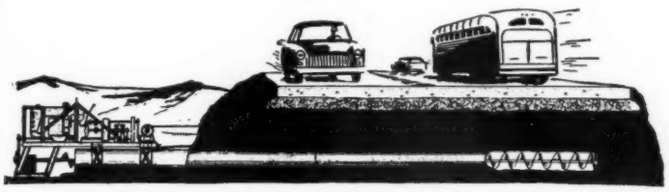
Importance of auctions

There should be no doubt that the auction method of selling is and can continue to be of service to contractors and dealers alike. At an auction there are none of the distorting influences on prices—such as over-allowances, big trade-ins, or time sales. For many types of properties and commodities, the prices determined at an auction are considered the most realistic prices, and are recognized as the true market price.

But contractors and dealers should always check the auction firms when contemplating having or attending a sale. There are differences between auction firms just as there are between firms of other types of business.

A check on an auctioneer's credit rating, consultation with his banker and representative firms for which he has conducted sales, and a sounding out of sellers and buyers as to his reputation—all these will give a contractor something reliable to go on.

It all boils down to this: Know your auctioneer. His reputation is the best index to sale. THE END



ELIMINATE COSTLY TUNNELING BACKFILLING . . . MUDJACKING

. . . With This Quick ROAD-BORING SERVICE!

An economical Horizontal and Road Boring Service is offered you by Scarborough Contracting Corporation . . . eliminating three expensive steps for you: tunneling, backfilling, mudjacking.

Our service is quick . . . thoroughly dependable. Used extensively in Eastern United States.

- Most efficient method.
- Installed to grade.
- Water conditions no hazard.
- Places up to 36" casing to accurate line and grade.
- Machine and auger one unit. Machine pulls auger out, leaving casing.

Write today for full details

SCARBOROUGH
CONTRACTING CORPORATION
HADDONFIELD, NEW JERSEY • Phone Ha. 9-7070

UNIT
MODEL 510

THE NEW UNIT Challenger
. . . as a DRAGLINE

NOTHING BUT THE BEST! There's no substitute in the ⅜-yard excavator field for EXPERIENCE. UNIT has it! UNIT knows what you need in a ⅜-yard machine . . . knows how to engineer the power, over-all performance-superiority and economy of operation for the jobs you want to do profitably with a ⅜-yard dragline, clamshell, crane or trenchoe. The New UNIT CHALLENGER proves this with such features as: Self-aligning Hook Shoes . . . Force Feed Lubrication . . . Full Floating Trunnion-Mounted Tapered Drums . . . Torque Converter, etc.

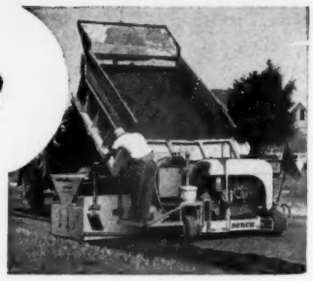
See the many other new features illustrated and described in UNIT CHALLENGER Bulletin C-800. Write for your copy of this bulletin.

UNIT CRANE & SHOVEL CORP.
6309 W. Burnham St. • Milwaukee 14, Wis., U.S.A.

Geared to boost your earnings!

BURCH
ROAD WIDENER
(PATENTS PENDING)

- For 2 ft. to 4 ft. standard widening.
- 4-speed conveyor belt.
- Will empty its hopper as fast as you can fill it.
- Equipped with BURCH exclusive truck coupler and special BURCH adjustable truck hitch.
- Applicable to any standard dump truck.



Write Dept. CE for literature.

The BURCH Road Widener is attachable to any truck. Built-in conveyor, which is driven by heavy industrial gas motor, will deliver material where required. It will handle sand, gravel, stone, or bituminous material. Self-propelled and steered by hydraulic equipment. A high speed unit unexcelled in road construction.

The BURCH Corporation
MANUFACTURERS OF EQUIPMENT FOR CONSTRUCTION AND MAINTENANCE OF ROADS AND STREETS
CRESTLINE, OHIO, U.S.A.

Saves 6 men, 4 tampers, 2 compressors and small dozer with one-man-operated "80-W"

VAN DOREN BROTHERS of Richmond, Virginia recently backfilled and compacted approximately two miles of trench, 2 feet wide and 4 feet deep, for a 6-inch gas line with just one man and one machine, a Cleveland "80-W" backfiller.

Before the Van Dorens purchased their "80-W" they used 7 men, a rubber-tired dozer, 2 compressors and 4 air-driven tampers for backfilling and compacting on jobs of similar size and type. The one-man-operated "80-W" did the complete job in less time than the 7-man crew formerly required on comparable jobs. "It's a great time saver," was F. M. Van Doren's comment on its performance.

On a previous job their Cleveland backfiller had saved them considerable time and money on a 12-inch water line trench, averaging approximately 6 feet deep, by its unique ability to backfill spoil deposited on a down slope on the far side of the trench, while simultaneously tamping it to the state of Virginia's rigid compaction specifications.

The "80-W" also does an outstanding job of side-crane work, lays pipe, pulls crossings, sets hydrants and valves, pulls sheathing, loads and unloads pipe, etc. Despite its ability to perform all these operations—and do an outstanding job on *each* of them—the "80-W" is easy to operate. The Van Dorens' operator learned to operate it with high efficiency after only two days training on the job.

Investigate this remarkable time, labor and machinery saving tool now—so that you, too, can realize its outstanding benefits on your next job.

See your local distributor for the full Cleveland story or write direct to:

THE CLEVELAND TRENCHER COMPANY • 20100 St. Clair Ave., Cleveland 17, Ohio

CLEVELAND

MONEY

Facts on finance

by WILLIAM HURD HILLYER

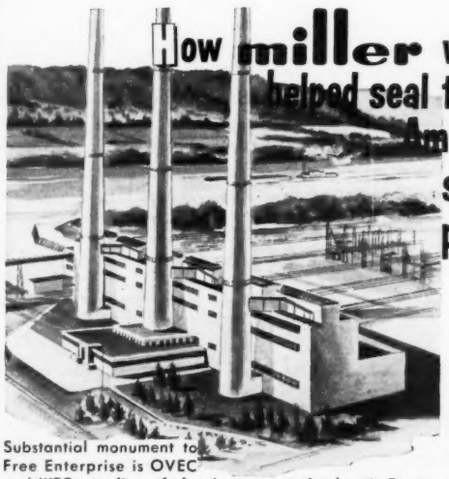
Because every construction job has its own equipment requirements, the capital needs of construction firms fluctuate widely. For this reason, it hardly pays the contractor to tie up his own funds in expensive equipment when the cost of financing its purchase is less than his working cash will earn.

Not long ago power shovels and similar machines were bought with a 1/3 cash payment and 12 installments. Some well-established makers of road machinery are still adamant in this practice. But recently, banks and other financial institutions, together with certain equipment manufacturers, have worked out special plans for easing the contractor's financial load. Some methods involve the purchase of machinery; other methods involve leasing of equipment.

Outright purchase

Financing the outright purchase of heavy equipment is a favored operation at one of New York's three largest banks. This firm has two principal ways of providing funds for contractors. The first and simplest is by direct loans, which are available only to the older and larger concerns with ample working capital. These borrow on their general credit without reference to any specific undertaking.

But the majority of this bank's contractor loans are directly related to a particular job and its equipment. Such loans run from 12 to 36 or from 18 to 24 months, depending on the nature of the job. The paper is signed by the contractor, endorsed by the equipment dealer, and secured by a "hire-purchase" agreement.



How miller welders helped seal the arteries of America's largest single purpose power plant...

Substantial monument to Free Enterprise is OVEC and IKEC, suppliers of electric power to the Atomic Energy Commission's new uranium diffusion center in Pike County, Ohio.

Miller Selenium Rectifier d-c Arc Welder, in four wide-range models. For complete, concise, worthwhile information on these and other Miller Arc and Spot Welders, contact us today ... at no obligation, of course.

Ohio Valley Electric Corporation and its subsidiary, Indiana-Kentucky Electric Corporation, agreed to supply electric power to this great new atomic production center . . . *15 billion kilowatt-hours annually.*

Two huge generating stations are being built: The Kyger Creek Plant at Cheshire, Ohio will have five generating units of 200,000 KW each; Madison, Indiana's Clifty Creek plant will produce 1,200,000 KW with its six big generators. Each of the eleven turbo-generating units will operate off a single boiler, with super-heated steam reaching 1,050 degrees Fahrenheit under 2,000 lbs. pressure per square inch! The high temperatures and reheat, which the sponsor companies have pioneered in their own right, will make these two plants among the most economical, most efficient generating stations in the country.

These same elements, however, make the fabrication of faultless high-pressure steam lines vital . . . and extremely difficult. To accomplish this extremely important task, pipe welding specialists equipped with the maximum of engineering skill utilized the Miller Selenium Rectifier d-c Arc Welder.

". . . . if it's Miller, you *know* it's the *finest!*"

miller ELECTRIC MANUFACTURING COMPANY, INC.
APPLETON, WISCONSIN

Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal, P.Q.

Use the
Request Cards
Between
Pages 18 & 19
To Obtain
Further
Information
Or Printed
Matter on
Any Product
Advertised
Or Described
Editorially
In This
Issue

Use the Request Cards Between Pages 18 & 19 To Obtain Further Information or Printed Matter on Any Product Advertised or Described Editorially in This Issue

Banks and financing companies provide a variety of methods for leasing or buying equipment on favorable terms

Under the agreement, title to the machine remains with the holder of the loan until the debt is paid. In out-of-town transactions, this New York bank participates with the local bank, which handles the details and puts up part of the money.

An executive of the same bank estimates that the outstanding volume of bank loans for heavy-construction firms in the New York City area now stands at considerably more than $100 million. This figure does not take into account the huge sums lent by banks to finance companies, which in turn possess a sizable amount of construction equipment paper.

Choice of methods

Five financing methods are used by Atlanta's Citizens & Southern National Bank to finance road-building contractors—a customer group which vice president James R. Furniss considers "most important".

These are the methods and the way they work:

1. Financing through equipment dealers: these dealers sell the machinery to road-building firms. Their installment paper, secured by the machinery, is discounted for the dealer by the bank. This plan has been found more practical than either the old-fashioned "line of credit", which uses notes that are constantly renewed, or the more modern "term loan" with one to three years' maturity. Currently the C & S bank has some $2,500,000 outstanding in paper secured by road-building machinery. Another half million has been furnished to dealers for "floor planning"

(Continued on next page)

Preventive Maintenance on Construction Industry's Hydraulic Equipment simplified with

MARVEL SYNCLINAL FILTERS

SUMP TYPE (Cutaway)

Changes excessive and costly "Down-time" to Profitable "OPERATING TIME"

Any workman can easily disassemble, thoroughly clean and reassemble MARVEL Synclinal FILTERS, on the spot, in a matter of minutes. RESULT:—the equivalent of a brand new filter, ready for longer periods of dependable service and protection.
MARVEL Synclinal FILTERS are "permanent type" filters because there are no throw-away parts to buy or replace, no moving parts to wear out or break down. YOUR FIRST COST is your ONLY COST!
Marvel's BALANCED Synclinal design offers 2½ times more ACTIVE filtering area with sufficient storage capacity for filtered-out damaging particles; thus, longer periods of productive operation are attained at minimum filter maintenance "down-time".
You can further simplify your preventive maintenance program by standardizing with MARVEL Synclinal FILTERS, by specifying them on all new equipment and installing them on all existing equipment.

FOR EFFICIENT FILTRATION of hydraulic oils, fire-resistant fluids, coolants, lubricants and water, and—
FOR DEPENDABLE PROTECTION on all hydraulic and other low pressure circulating systems—
Investigate MARVEL SYNCLINAL FILTERS!
OVER 550 Original Equipment Manufacturers now install MARVEL Synclinal FILTERS as Standard Equipment.

A SIZE FOR EVERY NEED
Available for sump or line installation in capacities from 5 to 100 G.P.M. Greater capacities may be attained by multiple installation (as described in catalog). Choice of monel mesh sizes range from coarse 30 to fine 200.

LINE TYPE (Cutaway)

Immediate Delivery
As in the past, Marvel continues to offer IMMEDIATE DELIVERY.

MARVEL ENGINEERING COMPANY
625 W. Jackson Blvd., Chicago 6, Ill. Phone: Franklin 2-4431

Catalogs containing complete data available on request

Without obligation, please send me complete data on Marvel Synclinal Filters, as indicated:—
☐ Catalog #106—For Hydraulic Oils, Coolants and Lubricants
☐ Catalog #300—For WATER
☐ Data on Filters for Fire-Resistant Hydraulic Fluids.

Name .....
Title .....
Company .....
Address .....
City .....
State ..... (CE-6)

It's the PREHY Grouter & Placer

(in the size and model to meet your job requirements.)

that affords BIG SAVINGS and a job well done.

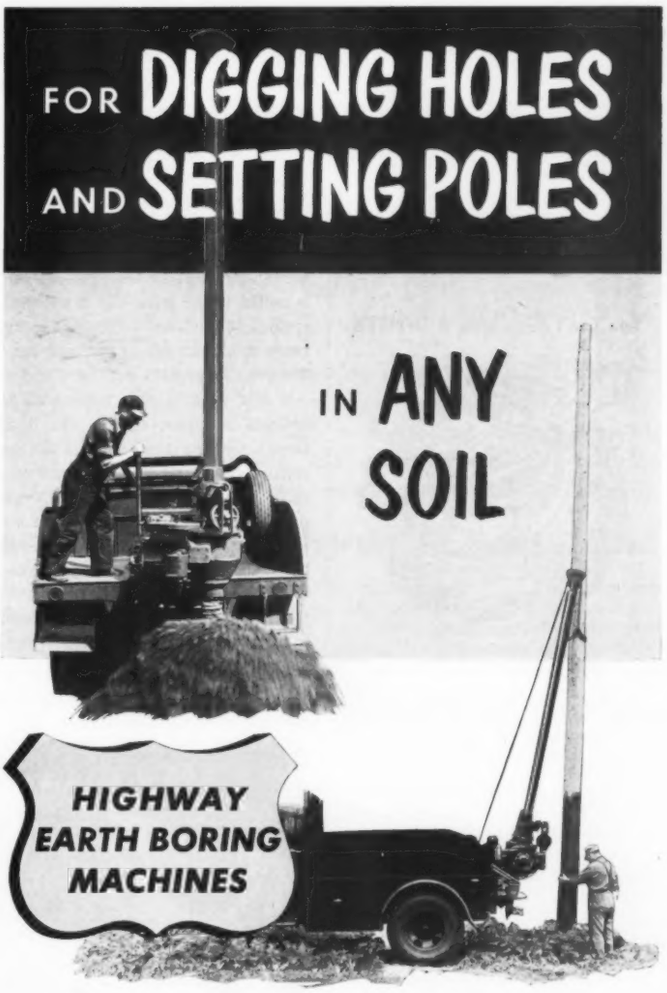
★ ★ ★

A machine for every need—from the hand pump grouting-in of reinforcing rods to pneumatic placing of ¾" aggregate mixes in forms.

Write for descriptive literature

PREHY COMPANY 420 Lexington Ave., New York 17, N. Y.

FOR DIGGING HOLES AND SETTING POLES IN ANY SOIL



Whether it's in clay, shale, or frozen ground . . . the Highway Earth Boring Machine is rugged enough to dig holes 9" to 20" in diameter, 7' to 10' deep in any soil except solid rock.

Light enough to mount on a 1½-ton truck, these boring machines need only 6' of platform space. Quickly adjusted to dig at any angle. Include an integral winch and pole derrick that will set 40- to 45-foot poles, weighing 2,000 to 2,500 pounds. Can be mounted on either truck or tractor.

See your Highway representative for details or call or write for complete information and specifications.

HIGHWAY TRAILERS

HIGHWAY TRAILER COMPANY
HEADQUARTERS: EDGERTON, WISCONSIN
MANUFACTURERS OF:
Public Utility Bodies • Earth Boring Machines • Pole and Cable Reel Trailers • Winches • Power Take-Offs • Service Accessories

(Continued from preceding page)

(i.e., inventory), thus increasing their working capital.

2. Financing through direct loans to contractors. The bank's industrial division handles these loans on a business installment basis. Substantial sums are also borrowed by road contractors to complete specific jobs. The basis for these loans is estimated earnings for work already done.

3. Financing through equipment manufacturers in the bank's trading area. Makers of trailer trucks are using more than $4,500,000 of C & S money, much of which goes into the fabrication of asphalt-hauling units and other road-building devices.

4. Financing through putting up "earnest money" for bidding on contracts. The procedure in such cases is to have the contractor's direct obligation for such advances.

5. Financing through bond purchases: the bank maintains a special department, dealing in municipal and other bonds, which works closely with road builders and other heavy contractors.

Leasing

Banks are forbidden by law to invest in machinery or other chattels. Therefore, the contractor who prefers to rent his equipment rather than purchase it must find a manufacturer or dealer willing to lease machines. He might also consult a member of that newest financial fraternity, the "professional lessor." The lessor makes a business of buying, owning, and leasing a variety of capital goods.

Certain equipment manufacturers have formed their own lessor companies. Among these, Clark Leasing Corp., lessor of Clark construction machinery, also has a "straight" type of lease. This does not have a purchase option, but has an option to extend the lease at a reasonable rental. The total cost of unit is figured by adding to the plus-freight-and-attachments cost these percentages:

a. Five per cent is added for a three-year straight lease, 10 per cent is added if the lease has a purchase option, 10 per cent is added for five years straight, and 15 per cent for a five-year lease with purchase option.

b. For a three-year lease with or without purchase option, the total rental for the first year is 50 per cent of the machine's cost. This goes to 30 per cent in second and 20 per cent in third. Under a five-year lease with or without option, 5/15 of the total cost is payable the first year, 4/15 in second, 3/15 the third, 2/15 the fourth, and 1/15 the fifth. Each annual amount is payable in twelve equal monthly installments.

The Clark program can apply to net amount due after trade-in allowance. The trade-in figure is deducted from the total rental determined in "a" and the remainder payable as in "b". The total trade-in rentals equal cost minus trade-in allowance, plus costs for freight and attachments. The lessee pays maintenance, insurance, and tax costs as these expenses are incurred, and treats the unit as if it were his own.

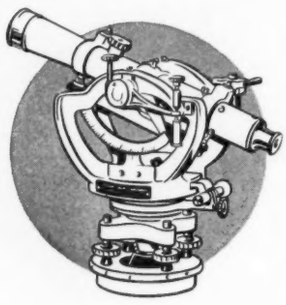
Financing and leasing plan

Users of material-handling equipment are offered an intergrated financing and leasing plan through MHE Corp., a wholly owned subsidiary of Yale & Towne Manufacturing Co., New York, N. Y. Terms are provided up to five years for gasoline-powered equipment and up to nine years for electric-powered machines. The lessee may have an option to renew for 2 per cent of the original sales price per year, or an option to purchase the equipment at the end of the lease term for 2½ per cent of the original sale price. Variations of this schedule are provided for the purchaser's convenience. The general scheme calls for rental payments which give the lessor a return of the sale price value of the equipment, plus return for financing the purchase over the lease term.

In addition to independent and "captive" lessor companies, there are

(Concluded on next page, col. 3)

You Can't Miss With A WHITE



Universal Level-Transit

everything you could ask for in a transit

Whatever you're looking for in a transit . . . look no further . . . WHITE'S got it . . . and in good measure! More than 40 years of know-how assure you of ACCURACY . . . to within 5 minutes on the vernier. SIMPLICITY . . . designed without unneeded frills or gadgets for fast adjustability and easy reading. DURABILITY . . . built for rough going, winter or summer and for years on end. PRICE . . . model 3000 complete with tripod for only $195.00* is a value you can't equal. Fill in coupon below for complete details and name of nearest dealer.

DAVID WHITE COMPANY

. . . manufacturers of fine optical instruments that engineers, surveyors, meteorologists and navigators have regarded as standard for more than 40 years.

**Prices subject to change without notice.*

Do you want ALL the details? MAIL THIS COUPON TODAY.

DAVID WHITE COMPANY—Dept. 655
313 W. Court St., Milwaukee 12, Wisconsin

Yes, I'd like full details and prices on DAVID WHITE instruments and name of nearest dealer.

NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

RUEMELIN Blast Generators

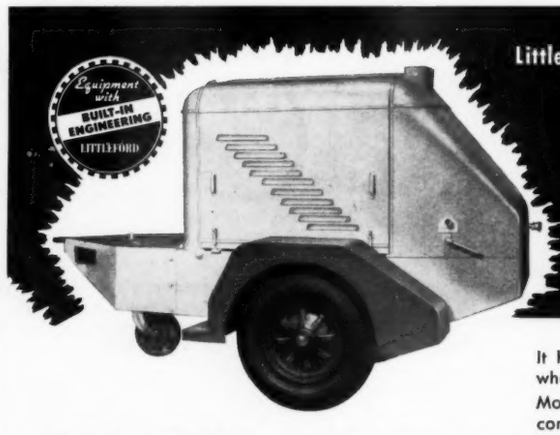
Ideal for Cleaning Bridges Water Towers - Structural Steel

Many contractors use Ruemelin Blast Generators for cleaning steel work to remove rust, paint and scale before repainting. These machines are also used to remove laitance from cement wherever concrete construction is in progress. A wet adapting nozzle can be furnished to convert dry machines to wet type of operation. Built in several sizes.

Write for Bulletin 36-D

RUEMELIN MFG. CO.

MFRS. & ENGRS. • SAND BLAST & DUST COLLECTING EQUIPMENT
3868 NORTH PALMER STREET • MILWAUKEE 12, WISCONSIN, U. S. A.



Littleford "TANKAR" Steam Heater delivers

- **200 lbs. of STEAM in 2 MINUTES!**
- **HEATS ONE OR TWO TANK CARS**
- **COMPLETELY AUTOMATIC**

You can unload asphalt, tar, cut back, road oil or emulsion from tank cars faster now . . . with the Littleford "Tankar" Steam Heater. This complete, self-contained "steam package" delivers 200 lbs. of steam 2 minutes after you start the burner.

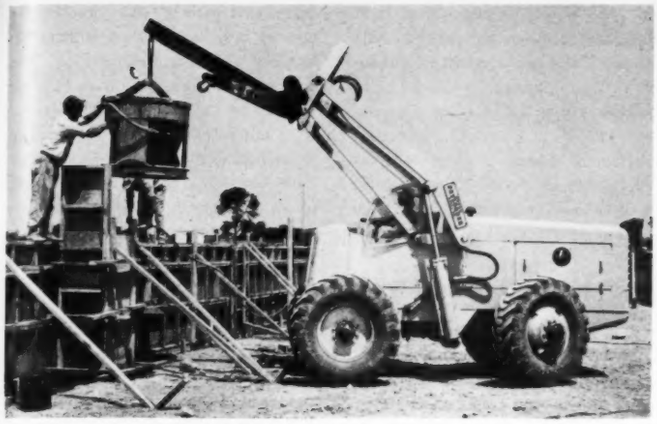
It holds enough water, oil and gasoline to heat a whole tank car.

Most important, the Littleford "Tankar" Heater is completely automatic. Feeds water, turns burner on and off and controls temperature and steam output automatically.

There are many more reasons why you should check the Littleford "Tankar" Heater before you buy. Send today for your free copy of bulletin 21.

LITTLEFORD

LITTLEFORD BROS., INC.
485 E. Pearl St., Cincinnati 2, Ohio



Contractor Vernon C. Neal of Pittsburgh finds his Hough HM Payloader one of the most versatile rigs in his equipment spread. Here the unit uses a Blaw-Knox ½-yard bucket to place concrete on a school job in Pennsylvania.

Case history

Versatile tractor shovel "really pays for itself"

Vernon C. Neal, Inc., Pittsburgh, Pa., building contractor, is finding that its Hough HM Payloader is "really paying for itself" on a $600,000 township school project at West Franklin, Pa. The fact that the machine can be put to multiple use accounts for both efficiency and economy on the job, according to the contractor.

The Payloader backfills; grades; handles cement in a Blaw-Knox ½-yard bucket; handles lumber, bricks, and other building materials; unloads trucks; and does literally dozens of other jobs on the project.

The Payloader used on this job was purchased in August of 1953, and for more than a year it operated without a single breakdown or a bit of downtime. A superintendent on the project declares that "nothing else can come close to this machine; it's really paying for itself."

Revised text offers course in surveying

"Elementary Plane Surveying", a combined classroom text and manual of exercises for field and office, has been published in a revised and enlarged third edition by McGraw-Hill Book Co., Inc., New York, N. Y. Written by Raymond E. Davis, professor emeritus of civil engineering at the University of California, the book presents a sound course in surveying which may also be used as a medium for studying the principles of measurement and the adjustment of observations.

Material on construction surveying has been collected in a separate chapter in the new edition. Other additions include a summary of tables of errors in chaining and errors in leveling, a brief descriptive chapter of photogrammetric surveying, and sections on mine and mineral-land surveying, new types of instruments, and aircraft jigs.

Priced at $5.50, "Elementary Plane Surveying" may be ordered direct from the McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36, N. Y.

(Continued from preceding page)

firms which might best be described as "equipment leasing specialists", which arrange leases suited to individual requirements. According to M. S. Rosen, president of National Equipment Rental, Ltd., Long Island City, N. Y., a firm with a $2 million contract may, instead of buying a $30,000 crane, have National Equipment Rental buy one with bank money and formulate a lease precisely adapted to a particular job. Thus the contractor is able to make a complete charge-off out of earnings.

Equipment leasing, say its proponents, frees contractors' working capital, preserves their balance-sheet position, permits them to take on specific jobs without disturbing their capital structure, and fosters machinery replacement on a "pay-its-own-way" basis. Leasing also presents certain tax advantages in most cases. The lease method seems particularly well adapted for heavy-construction firms, because it assures the contractor of service of the machine only so long as it is needed. It does not necessarily commit the lessee to the purchase of the machine. THE END

Of 35,000 fatalities in traffic accidents in 1954, excessive speed was responsible for 12,380, according to the Travelers Insurance Companies.

BRAND NEW
Completely Different...
BUCKEYE 308

. . . Here's the first of Buckeye's new "O" series ditchers — a pipeline and utility model that will outperform, point for point, any machine in its class! . . . Check the features listed below — then let your dealer show you how its heavy-duty construction, its rugged new Buckeye designed transmission, its new engine options and a host of other features make tough going easy — and put the new '308' definitely on top *by any standard of comparison in the pipeline or utility field.*

LOADED WITH EXCLUSIVE FEATURES!

HYDRAULIC CONVEYOR DRIVE . . . is completely controllable from operator's seat. Provides forward or reverse belt drive in a selection of 3 speeds to meet any conveyor need. Eliminates the shock damage normally found when driven mechanically from digging wheel drive — no complicated mechanical units!

LIVE HYDRAULIC WHEEL HOIST . . . for fast, accurate positioning of digging wheel independent of all other functions. Hoist operated by simple, one-hand controls from operator's seat.

TRACTOR-TYPE CRAWLERS . . . allow variation in tread width and bearing area thru selection of tread pads to suit any type digging. Idler rollers have face-type seals for longer crawler life.

SIMPLIFIED GROUP CONTROLS . . . with panel mounted conveyor and hoist controls, foot operated steering controls. All controls need only light pressures, are within easy reach of operator. Control arrangement simplifies use by experienced operators — speeds "breaking-in" time of new operators.

STREAMLINED UNIT DESIGN . . . plus standardized unit construction give both a neat, compact design and interchangeability of major components and assemblies with other new series "O" Buckeye ditchers to be announced very soon

HEAVY DUTY DIGGING CAPACITY . . . digs to 5' 6" deep with optional cutting widths from 16 to 32 inches, in 2 in. steps.

No. 5521

GAR WOOD INDUSTRIES, INC.
WAYNE, MICHIGAN

Outperforms any machine in its class!

A Lima 1601 shovel with 4-yard dipper bucket loads a Tournarocker E-18 for the C. F. Replogle Co., Circleville, Ohio, on a highway job. The Lima has been in operation 8 months without a single mechanical failure.

Case history

Production up, lost time down with improved shovel

A Lima 1601 shovel with 4-yard dipper bucket has been in use 8 months on highway work in Ohio and loaded out approximately 500,000 cubic yards of rock without a single mechanical failure. The owner, C. F. Replogle Co., heavy construction firm of Circleville, Ohio, reports that the machine "adequately fulfills the requirements of the larger highway contractor for a high-capacity trouble-free job-proven shovel which can easily be broken down and reassembled."

Replogle has found the Lima will consistently load out one Tournarocker E-18 of 10-yard-plus capacity per minute, will dig laminated rock which would otherwise require drilling and shooting, is readily convertible to a dragline or 75-ton-capacity erection crane, and may be dismantled, moved 200 miles, and reassembled in 3 days. The contractor also reports that the original capital investment is "considerably less" than that for other machines of similar capacity.

Other advantages this Ohio earthmoving contractor cites are the fact that it is not necessary to "clutch" the hoist on this unit, and the improved efficiency due to the newly designed crowd and brake mechanism.

Policy for contractors saves equipment losses

■ Wherever expensive construction machinery may be at any given moment, it is subject to many hazards which can unexpectedly reduce its value to that of scrap. Fire, theft, damage from explosion, collision, overturn, landslide, windstorm, and riot can deprive a contractor of the use of an important unit long enough to seriously affect his performance on his contract. Replacement cost is often beyond his immediate resources.

The Hartford Accident and Indemnity Co., Hartford 15, Conn., which offers broad protection against this risk through its contractors' equipment policy, has prepared a booklet designed to help contractors avoid a big loss of this kind. The booklet, available on request, lists machinery and its actual cash value.

To illustrate the value of its equipment policy, the concern cites a case from its files in which $12,000 worth of construction machinery was reduced to scrap overnight. Parked in a shed after working hours, a tractor and a straddle carrier were destroyed when the shed caught fire. What was left brought $65 as scrap. Under a contractors' equipment policy, however, the Hartford Fire Insurance Co. paid $12,256.70.

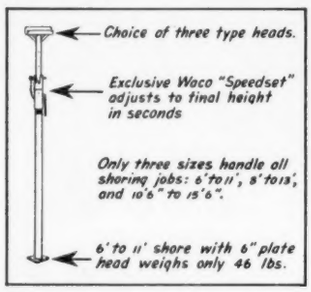
To obtain a copy of "Your Machinery and its Actual Cash Value", write to the company, or use the Request Card at page 18. Circle No. 170.

Fast Pouring Schedule Met With New All Steel Shores

Lutheran Brotherhood Building, Minneapolis
Kraus-Anderson — General Contractors

Just nine days between pours is all the time allowed on this six story, 96,000 square foot office building. Over 1800 Waco All Steel Shores were used on the job by General Contractors Kraus-Anderson in order to get the necessary speed without increasing the estimated labor cost.

A crew of 10 carpenters and five laborers set up the 1200 shores for each floor in just four days. Slab and column forms and steel work ready for pouring were finished in another four days. A total of 8,000 yards of concrete were required for the structural portion of the building.


Choice of three type heads.
Exclusive Waco "Speedset" adjusts to final height in seconds
Only three sizes handle all shoring jobs: 6'to11', 8'to15', and 10'6" to 15'6".
6'to 11' shore with 6" plate head weighs only 46 lbs.

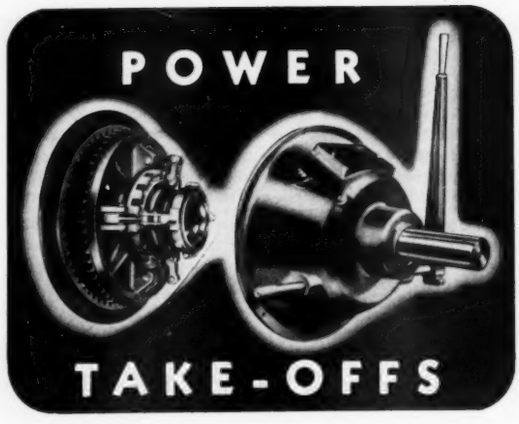
One man can set a Waco shore in ONE MINUTE thanks to the exclusive time saving features shown above. The new WACO design ends splicing, scabbing, and wedging and gives you the maximum of safety and accuracy in the shortest possible time.

For estimates, rentals, and service on all your shoring jobs, contact your nearest Waco scaffolding and shoring expert. He's in the yellow pages of your phone book. Or write to:

WACO Manufacturing Co.
3569 Wooddale Ave.
Minneapolis 16, Minn.

Licensees
Waco May Co. — Los Angeles
Armson Iron Works — Windsor, Canada

ROCKFORD



A SIZE AND TYPE FOR EVERY USE

SELF CONTAINED UNIT
WIDE RANGE OF SIZES
CONSERVATIVE RATING
ROLLER BEARINGS
FINE ADJUSTMENT
ACCURATE BALANCE
S.A.E. DIMENSIONS

* ROCKFORD POWER TAKE-OFFS are available in standard sizes ranging from 125 foot pounds to 2100 foot pounds torque. Clutch sizes range from 6½ to 18 in. double plate. These complete, self-contained units are suitable for heavy-duty gear-tooth application to current industrial gasoline and diesel engines.

Send for This Handy Bulletin
Shows typical installations of ROCKFORD CLUTCHES and POWER TAKE-OFFS. Contains diagrams of unique applications. Furnishes capacity tables, dimensions and complete specifications.

ROCKFORD CLUTCH DIVISION BORG-WARNER
▲ 314 Catherine Street, Rockford, Illinois, U.S.A. ▲

CLUTCHES

Designed for
PROTECTION

BUILT FOR WEAR

Sawyer's "FROG" ® BRAND CLOTHING

can take it!

Tough — wears like iron, takes endless snagging, scraping, chafing and still gives full protection.
Rotproof — not affected by oils or chemicals — will not blister, crack or peel.
Waterproof — made with top quality base fabric, first saturation-coated, then coated on the inside as well as on the outside with specially blended Neoprene Latex.

Many styles — in black, yellow or Hunter's green
Write for catalog

THE H. M. SAWYER & SON CO.
Cambridge, Mass.

This Runabout ditcher cuts clean vertical trenches for footings on a housing-development project at Joliet, Ill. The vertical sidewalls and square ends of the trenches eliminate handwork and facilitate concrete placing.

Case history

Ditcher makes child's play of digging for footings

All-around footings for more than 900 slab-floor houses—a job completed in 11 weeks by one man and one machine. That's the amazing production figure racked up by Hunter Construction Co., Hastings, Minn., with its Barber-Greene Runabout ditcher.

Hunter got the contract for cutting the footings for dwellings which make up three developments in Joliet, Ill., but only after several types of equipment had been investigated and tested. When the contractor moved onto the job, he brought a Runabout rubber-tire ditcher with him and put it right to work. The rig's vertical boom made it possible to dig trenches with vertical walls and square ends, thus eliminating the need for subsequent hand digging. Being rubber-tire mounted, it needed no trailer or other conveyance for moving from one job to the next.

Digging time for each set of footings is generally a half hour, with an hour the maximum time under the most adverse conditions. Thus Hunter could finish 15 to 20 units in a single work day. Trench depth is 36 inches for 500 of the units and 42½ inches for the remainder.

A wide variety of digging speeds, hydraulic drive, and other operating features made operation of the Runabout a simple job for one man on this project.

W. S. Pollard, Jr., joins Missouri engineering firm

William S. Pollard, Jr., has joined the St. Louis, Mo., city planning, civil engineering, and landscape architectural firm of Harland Bartholomew & Associates. A former assistant professor of highway engineering at the University of Illinois, Mr. Pollard also did field airphoto-permafrost research in Alaska and was at one time associated with the Alaska Road Commission.

Asphalt Institute moves labs to Maryland campus

The 35-year-old research and engineering institution, The Asphalt Institute, recently moved its headquarters from New York City to the campus of the University of Maryland, College Park, Md. The Institute will occupy its own building in the new Glenn L. Martin Institute of Technology group on campus.

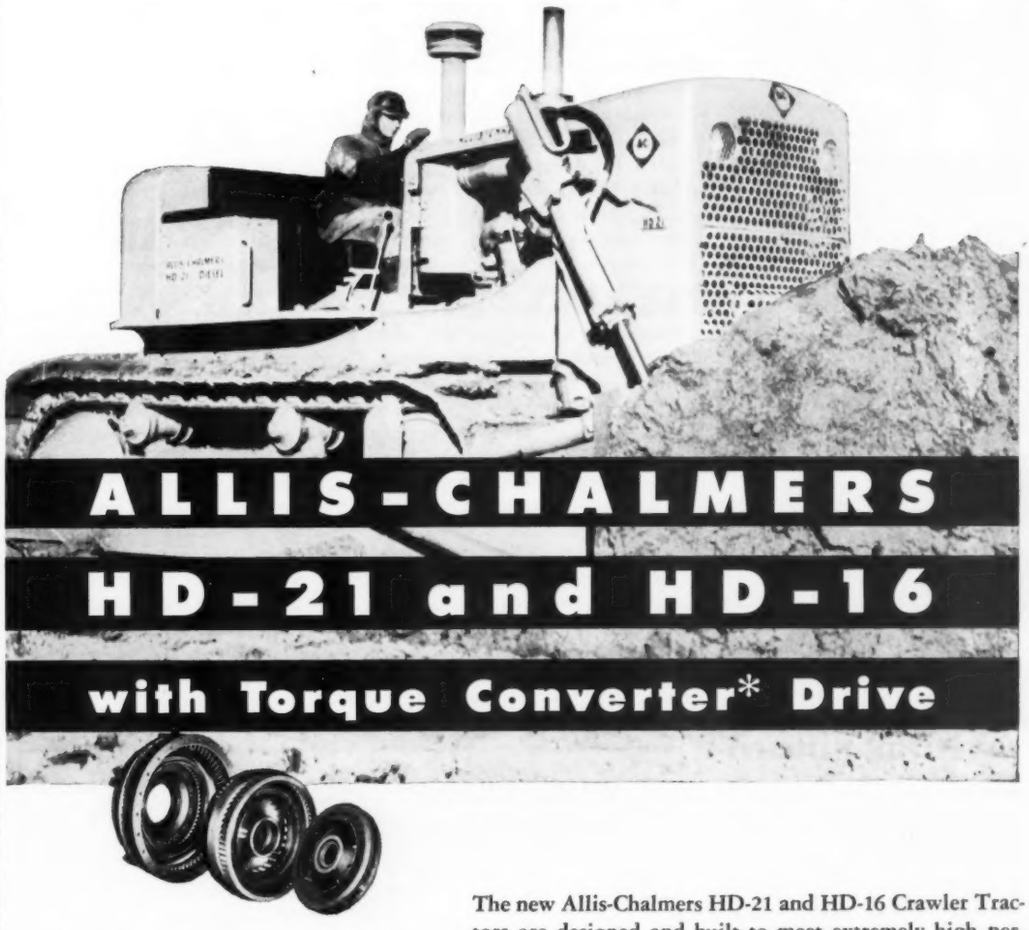
Administrative functions of the Institute have been centered at College Park since January, but resumption of the interrupted research program has been delayed until new laboratories are completed and equipment is installed. A nonprofit engineering and development organization subsidized by asphalt-making petroleum companies, The Asphalt Institute is headed by J. E. Buchanan; Arvin S. Wellborn is chief engineer.

New Euclid representatives

William R. Morrissey and Donald E. Lutz have been made district representatives for Euclid Division, General Motors Corp., Cleveland, Ohio.

Mr. Morrissey, formerly in the sales development department of the company, will work from headquarters in Buffalo, N. Y., to cover western New York, and the Canadian provinces of Ontario and Quebec.

Mr. Lutz, representative for Arkansas, Louisiana, Mississippi, and western Tennessee, will maintain headquarters in Memphis, Tenn.



The new Allis-Chalmers HD-21 and HD-16 Crawler Tractors are designed and built to meet extremely high performance requirements — while maintaining the rigid Allis-Chalmers standard for longer life and the ability to operate at low cost.

Many outstanding features are being introduced by Allis-Chalmers on the HD-21 and HD-16, including • all-new A-C Diesel engines with "follow-through" combustion, for greater work with low loading of engine parts and extra long overall engine life • new Tru-Dimension track, featuring greater weight and maximum toughness • new "Wrap-around" radiator guard which tilts forward and down for easy accessibility • *Twin Disc Torque Converter Drive as standard equipment on the HD-21; optional equipment on the HD-16 . . . designed by Twin Disc and Allis-Chalmers engineers to meet exclusive requirements of the HD-21 and HD-16.*

Twin Disc Torque Converter Drive was also standard equipment on the HD-21's predecessors . . . for since 1940, it has been a feature on A-C Crawler Tractors.

***and the Torque Converter is Twin Disc**

Since 1937, Twin Disc Clutch Company has specialized in Torque Converter Drive for powered industrial equipment. Crawler tractors represent one of the most successful applications.

By applying the crawler tractor's horsepower and torque through the cushioned drive of fluid, Torque Converter Drive permits peak utilization of horsepower and prevents engine lugging—provides smoother, easier, more flexible operation with minimum clutching and shifting—promotes faster work cycles and more production per day.

TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES

TWIN DISC
Torque Converters

Twin Disc Clutch Company, Racine, Wisconsin
Hydraulic Division, Rockford, Illinois

STOP
trucks from "bogging down" in mud!

Portable steel matting, interlocking, easy to handle, low in cost. Ideal for roadways, and storage areas on sand, dirt or mud.

Sold in any quantity

ALTER CO., Davenport 1, Iowa

CONSTRUCTION CAMERA

Plenty of work on the $225 million concrete hospital at Wolters Air Force Base, Mineral Wells, Texas, is done by a Bucyrus-Erie 22-B crane with 55-foot boom and 20-foot jib. The machine will later be equipped with a longer jib to pour concrete for the higher lifts of the three-story structure.

Atop a mesa near Zion National Park, Utah, a Caterpillar D7 dozer pioneers a cut for a 3.4-mile road leading to the Air Research and Development Command's supersonic military air research tract. The road leading to the top of the 12,000-foot-long mesa has a maximum grade of 10 per cent.

A good safety program can cut insurance costs

A Boston insurance man has some pertinent things to say about the economy of having a well planned accident-prevention program and the right type of liability insurance on each construction job.

H. E. Beaven, manager of the home office engineering department of American Mutual Liability Insurance Co., Boston, Mass., reminds contractors that not only will a bad accident record affect their bid price, but the wrong kind of insurance will make their premiums unnecessarily high.

"Too many contractors take the attitude that insurance is just one of those things they have to buy, not realizing that the amount they pay for this protection can be cut materially by a good accident-experience record, plus advice from an insurance company as to the type of liability insurance needed for the job being bid," Mr. Beaven points out.

Reminding contractors that their industry always has had a "very much worse" accident record than the manufacturing industries—due in large part, it must be admitted, to the much higher turnover in employees, Mr. Beaven declares that there is a continuing need for a well planned program of accident prevention on each job.

A well organized safety program, according to this insurance executive, will include a policy set by top management and carried out by supervisors all along the line; regular inspection of the job, investigation of accidents, and safety-program progress reports; use of standards wherever possible; education of supervisors and workers; and complete first-aid facilities.

Insurance companies stand ready to help contractors to develop their programs, but in the last analysis good results can be obtained only by good management of the contractor's organization regarding accident-prevention methods, Mr. Beaven states.

THE LATEST
VINYL PLASTIC WATERSTOP
for "wall-floor" and "between-pour" horizontal concrete construction joints

Water just can't get through joints protected by FLEXTRIP, the all-new, strip-type waterstop. Unique concave shape plus ribbed edges give FLEXTRIP a never ending grip in the concrete . . . is flexible enough to withstand extreme joint-separation (more than 3 inches) yet rigid enough to stand up to the battering effect of pouring concrete. Here's lasting joint-protection unmatched by any other waterstop. What's more, FLEXTRIP will never rust, rot, check or crack and is unaffected by acid, alkalies, petroleum products, chemicals or the most adverse atmospheric conditions . . . lasts as long as the concrete. Write for additional information on FLEXTRIP and other vinyl waterstops. Send coupon below.

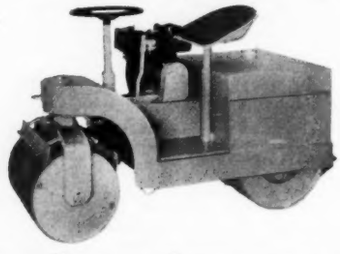
Made by the makers of LABYRINTH WATERSTOPS . . . the standard waterseal on outstanding construction jobs everywhere — eliminates seepage problems . . . simplifies form work.

WATER SEALS, INC.
9 South Clinton • Dept. 3, Chicago 6, Ill.

Without obligation, please send me information on your new FLEXTRIP and LABYRINTH WATERSTOPS.

Name_____
Company_____
Address_____
City_____ Zone____ State____

WESTERN DELUXE ROLLERS
1, 1½ and 2-TON MODELS



Big roller performance with small roller economy, portability and maneuverability.

Perfect for highway, road, and street asphalt patching; for paving sidewalks, driveways, and parking lots; and for landscaping.

LIST PRICES BEGIN AT $995.00

Distributors — Some Territories Available

WESTERN WELDING AND MFG. CORP.
2025 W. Clybourn St., Milwaukee, Wis. Phone: Division 4-3107

COMFORT KEEPS HATS ON

ANY safety hat protects the wearer *only* while it is worn. The GENTEX safety hat is specially engineered for maximum comfort to assure *full time* wearing for *full time* protection.

Only the GENTEX has a resilient, contoured plastic headband that shapes itself to the head, exerting no pressure even after a full shift's wear. It's lightweight . . . and cool even under the hottest sun.

It *really* protects! Tough GENTEX safety hats exceed all Federal specifications as well as standard mechanical, electrical and fire tests for protective headgear.

If you want to safeguard your men with a hat they'll *like* . . . and *wear* . . . give them GENTEX. Write for the complete story about these remarkable safety hats! Do it NOW!

General Textile Mills, Inc.
450 Seventh Ave. — N. Y. 1, N. Y.

Moving about 3,500 yards of dirt every 8 hours, a Manitowoc 2000 and two Manitowoc 3500 shovels load to 38 trucks at the site of the new Senate office building in Washington, D. C. Another Manitowoc 2000 drives sheet piling at the edge of the excavation. John McShain, Inc., Washington, D. C., has the contract.

One of the eight Nike launching sites in the Pittsburgh, Pa., area is compacted by a Gebhard sheepsfoot roller pulled by an International TD-18A crawler tractor. Quaker Engineering & Supply Co., Pittsburgh, doing the work at a total cost of $5 million, is moving a total of 400,000 cubic yards of dirt for the facilities.

International road group names Merriman chairman

H. S. Merriman was elected chairman of the International Road Federation, Washington, D. C., at the annual spring meeting of the board of directors in the nation's capital. Mr. Merriman, associated with Socony-Vacuum Oil Co., New York, N. Y., succeeds Frank T. Magennis, vice president of Goodyear Tire & Rubber Export Co. Mr. Magennis continues as a director of the organization.

Richard A. Hutchinson, vice president in charge of foreign operations for Studebaker-Packard Corp., replaces B. C. Budd as the only new member elected to the board. Mr. Budd was IRF's first chairman.

Photogrammetrists elect

Col. John G. Ladd, (Ret.), has been appointed executive secretary of the Association of Professional Photogrammetrists, Washington, D. C.

SOILS ENGINEERS and CONTRACTORS . . .

Investigate the

WASHINGTON **Dens-o-meter**

The KEY to *accurate* field tests for moisture-density of embankment and foundation soils

Developed after two years research and experiment by Department of Highways, State of Washington. Opens up entirely new possibilities for earthwork engineers and contractors. Engineers can now make accurate moisture-density and compaction tests

- in all large or small holes
- in all types soils and granular base materials
- in about 3 minutes after hole is dug

Now for the first time, holes of any size from 0.000 cu. ft. to 0.500 cu. ft. can be measured with the same equipment. Holes up to 22 inches in depth can be measured—singly or in successive lifts.

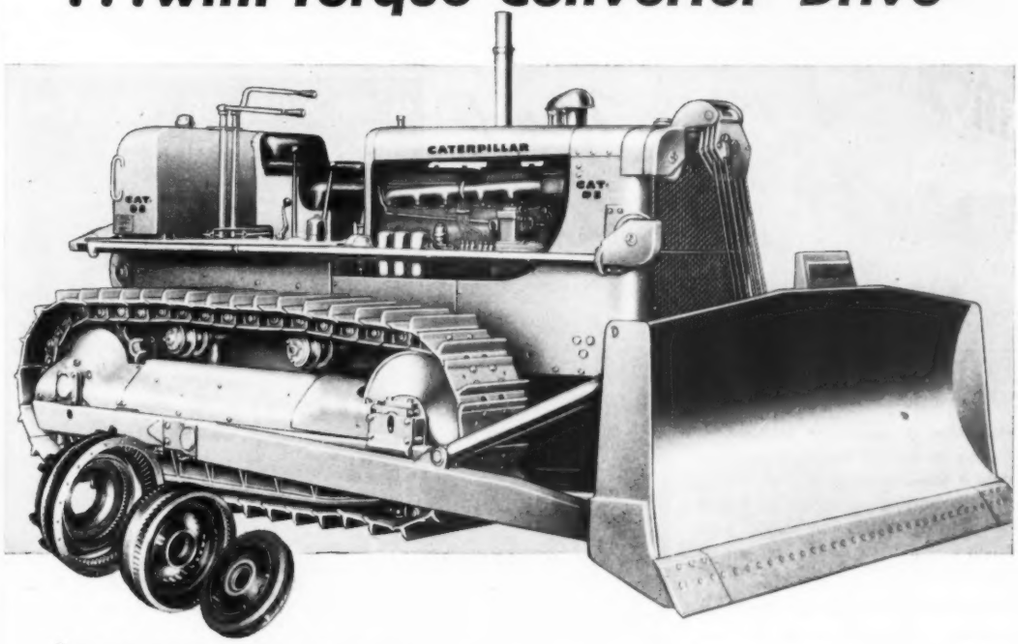
Get full information from

Exclusive Sales Agents

CHARLES R. WATTS & CO.
4121 SIXTH AVENUE NORTHWEST
SEATTLE 7, WASHINGTON

2 NEW CAT DIESEL TRACTORS D8 and D9

. . . with Torque Converter* Drive



***and the Torque Converter is Twin Disc**

Since 1937, Twin Disc Clutch Company has specialized in Torque Converter Drive for powered industrial equipment. Crawler tractors represent one of the most successful applications.

By applying the crawler tractor's horsepower and torque through the cushioned drive of fluid, Torque Converter Drive permits peak utilization of horsepower—provides smoother, easier, more flexible operation with minimum clutching and shifting—promotes faster work cycles and more production per day.

TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES

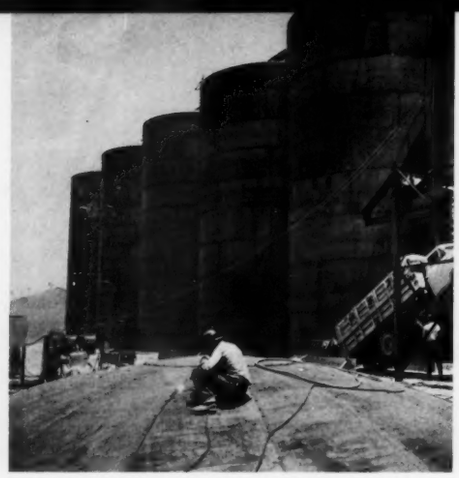
TWIN DISC
Torque Converters

Twin Disc Clutch Company, Racine, Wisconsin
Hydraulic Division, Rockford, Illinois

The new Caterpillar D8 and D9 Diesel Tractors are built to deliver an even higher standard of money-making production, on *any* track-type application in *any* field.

Many advance-design features are engineered into these powerful Cat-built machines, including new Cat Diesel Engines with an all-new fuel injection system; new 7-roller track frames for maximum stability, flotation, and better ride; new "Water-quenched" track shoes for longer life than ever before; Hydraulic Booster Steering for maximum steering ease; new starting engines with more power; "In-seat" starting for greater convenience . . . *and Twin Disc Torque Converter Drive as optional equipment on both the Cat D8 and D9 Diesel Tractors . . . developed by Twin Disc and Caterpillar engineers to match the precise power characteristics of the new D8 and D9.*

CONSTRUCTION CAMERA



Field fabrication of ten 1,000-ton grain-storage bins in Arizona is done with Lincoln welding equipment. The bins have a cone bottom, eliminating the need for an undeground conveyor.

A 230-foot boom (one of the world's longest) is used by a P&H crane working on 22-story New York City apartments. American Chain & Cable boom cable assemblies and ACCO ropes are standard equipment.

Prestressed lightweight concrete bridge girders, prefabricated by Empire Building Material Co., Portland, Oreg., are being shipped to Alaska. Lorain truck cranes place them aboard.

Protective coating for blacktop pavements

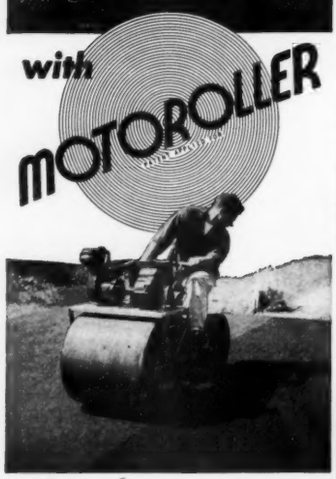
■ The use of Jennite J-16 to protect and preserve asphalt and blacktop pavements is recommended by Maintenance Inc., Wooster, Ohio, in a bulletin just released.

J-16 is applied by brush, squeegee, or distributor truck in a liquid coating over new or old surfaces to form a waterproof finish. It is said to protect against frost damage, abrasion, oxidation, solvent action of gasoline and oil, and the effects of the sun.

The coating is recommended for use on driveways, roads, parking lots, loading docks, and traffic aisles. It is also suitable for gasoline station and garage pavements, airport fueling and parking aprons, runway ends, and taxiways.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 130.

MAKE ROLLING JOBS PAY with MOTOROLLER



Motoroller is economical to operate, can be on and off the job in less time than it takes to bring in a big roller, and saves tying up heavy equipment on patching and small rolling jobs. More work per day rolls up profits for you.

Motoroller is versatile, too. Use it as auxiliary equipment to roll out laps left by large equipment and in confined areas of big jobs.

Ideal for driveways, gas stations, parking lots, athletic courts.

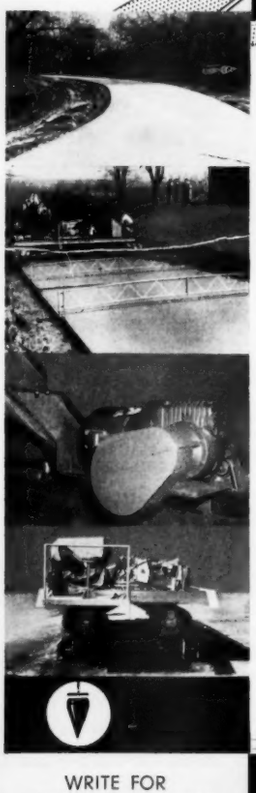
As Low as $449.50 F.O.B. Factory

Gabb Special Products
DIVISION OF
THE E. HORTON & SON CO.
WINDSOR LOCKS, CONN.

Now!

MORE MILES OF PRECISION PAVING PER DOLLAR

NO PAVING FORMS REQUIRED



QUAD-CITY (PATENTS PENDING)
SLIP-FORM CONCRETE PAVER

The Quad-City Slip Form Concrete Paver is self-propelled, adjustable from 20' to 25' width and from 0" to 10" depth of slab. Driven from a 10,000 watt engine generator plant and totally enclosed motors. The tamping action of the extruding mechanism eliminates the necessity of any spreading operation. The adjustable strike-off and tampers accurately meter the concrete with a uniform density to the vibratory screeds for final compaction. The standing of the vertical edge is due to the compaction by the tamping mechanism and vibratory screeds. A 24" rubber transverse belt follows to complete the surface finishing. The bridge may be turned on the center section providing a compact package capable of loading itself onto an 8 ft. wide tractor trailer. The capacity of this machine exceeds the capacity of mixing equipment.

WRITE FOR FREE LITERATURE

QUAD-CITY EQUIPMENT CO.
ROCK ISLAND, ILLINOIS

Use REMA to add years of life to your Belts

REMA is the New and Amazing Self-Vulcanizing Rubber Repair Material

REMA REQUIRES
- NO HEAT
- NO HEAVY EQUIPMENT
- NO CURING TIME DELAY

• REMA is not just another cold patch. REMA is vulcanization by chemical process. The repaired area is sealed with an abrasive resistant cover stock patch. No heat or heavy vulcanizing equipment required. Here's the astonishing advantage—*when repair work is completed belts may be returned to service immediately.*

• REMA seals out moisture, reduces mildew, rot and deterioration — the great enemies of conveyor belts. Your own maintenance man can quickly repair your belt — it doesn't take a skilled belt mechanic to use REMA.

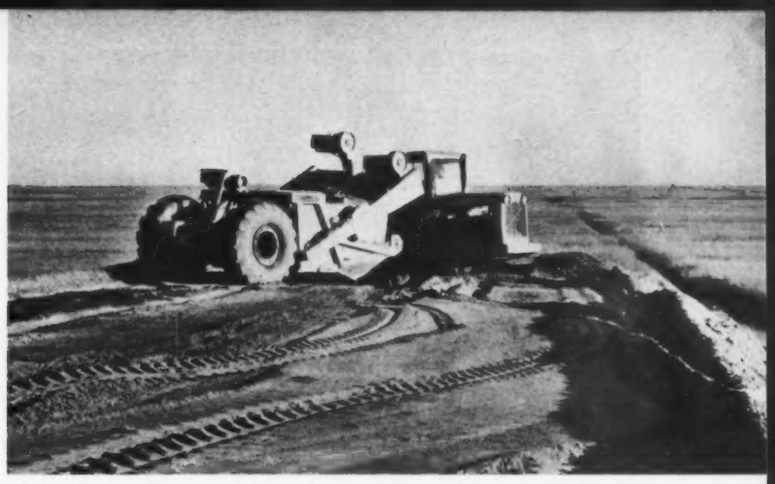
• Used for repair of all types of damaged spots, edge wear and for covering metallic joints. Available in introductory kits or parts separately.

Order from your Flexco-Alligator distributor
Write for Folder No. R4

FLEXIBLE STEEL LACING CO.
4608 Lexington St., Chicago 44, Ill.

REMA SELF-VULCANIZING RUBBER REPAIR MATERIALS

A new crossing of the Cape Fear River, N. C., will be the Tarheel Bridge, scheduled for completion next spring. The main bridge is a fixed-arch-type span, 300 feet long and with a 55-foot clearance. An overflow structure also being built will bring the cost of the work to $575,000.



Fill for the last section of a 7-mile-long dike at the Brigantine Wildlife Refuge near Oceanville, N. J., is placed by a LeTourneau-Westinghouse Tournapull powered by General Motors diesels. Eight of these units haul fill almost a mile over spongy terrain to the 48-foot-wide 9-foot-high earth dike.

Booklet gives opinions on highway financing

Federal, state, and local highway problems noted in speeches and discussions at the National Conference on Highway Financing are summarized in a new booklet, "Better Roads for Our Growing Nation." The report is published by the Chamber of Commerce of the United States, sponsoring agency for the conference.

The facts and opinions voiced at the conference give special attention to the President's $101 billion highway proposal, the current toll-road boom, and methods of financing street and highway construction.

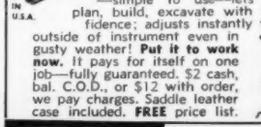
Many of the summaries of talks made by engineers, government officials, financiers, and businessmen at the meeting are followed by discussions presented in a question-and-answer form. Speeches made by Gen. Lucius Clay, chairman of the President's Highway Advisory Committee, Gov. Robert F. Kennon of Louisiana, and 12 others are summarized.

Graphs and tables in the second half of the book provide information on such highway facts as apportionment of federal-aid funds, highway user and automotive excise-tax revenues, state expenditures for all purposes and for highways, total annual adjusted street and highway expenditures, sources of funds by levels of government, and other important and controversial data.

Copies of the publication are available at $1 each from the Transportation and Communication Department of the Chamber of Commerce, Washington, D. C.

SIGHT LEVELS INSTANTLY!
STRATEX SURVEYING

Hand Level
$12.00



MADE IN U.S.A.

Positive slopes, elevations, drainage—farm, forest or construction. Built for life—simple to use—lets you plan, build, excavate with confidence; adjusts instantly from outside of instrument even in gusty weather! **Put it to work now.** It pays for itself on one job—fully guaranteed. $2 cash, bal. C.O.D., or $12 with order, we pay charges. Saddle leather case included. **FREE** price list.

STRATEX INSTRUMENT COMPANY, INC.
3515CE SUNSET BLVD., LOS ANGELES 26, CALIF.

INTERNATIONAL TD-24

with Torque Converter* Drive

For the largest earthmoving projects . . . for laying big pipe faster and surer . . . for attaining new highs in logging production . . . I-H has developed the new INTERNATIONAL TD-24 Torque Converter Crawler Tractor.

Among the many features offered in the new TD-24 are *fingertip hydraulic control* with INTERNATIONAL'S famous Planet Power Steering; *instantaneous high-low range shift,* with all transmission shifting done by just *one* gear shift lever; the exclusive *"Decelerator"* feature, which gives the operator complete control of engine speed at all times; and *Twin Disc Torque Converter Drive* as *optional equipment . . . tailored by Twin Disc and International engineers to the TD-24's exact characteristics.* TWIN DISC CLUTCH COMPANY, Racine, Wisconsin; Hydraulic Division, Rockford, Illinois.

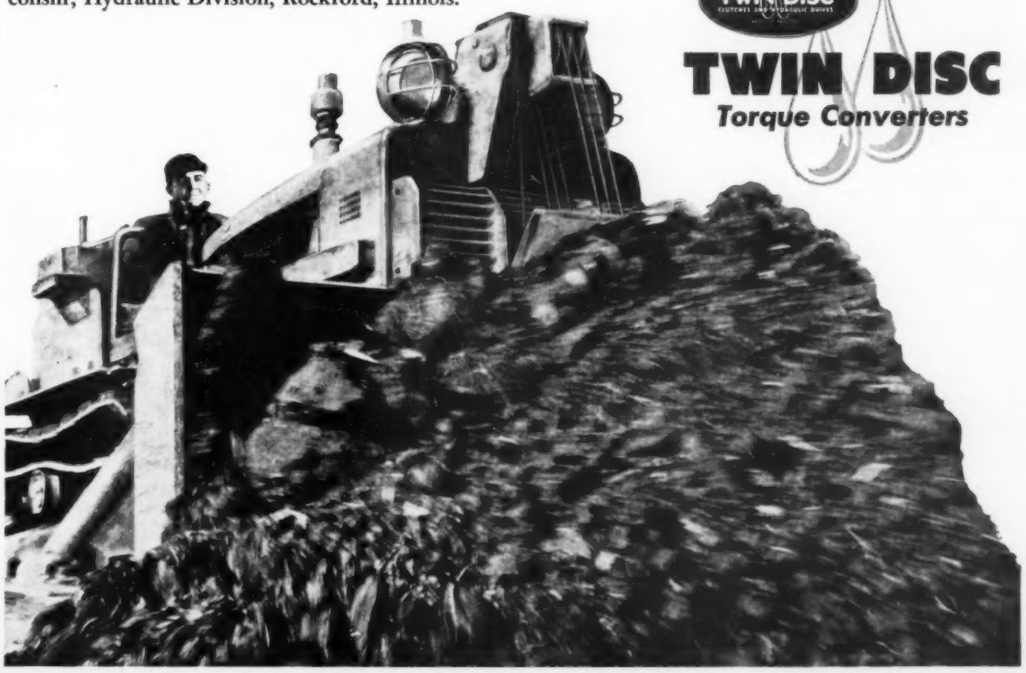
***and the Torque Converter is Twin Disc**

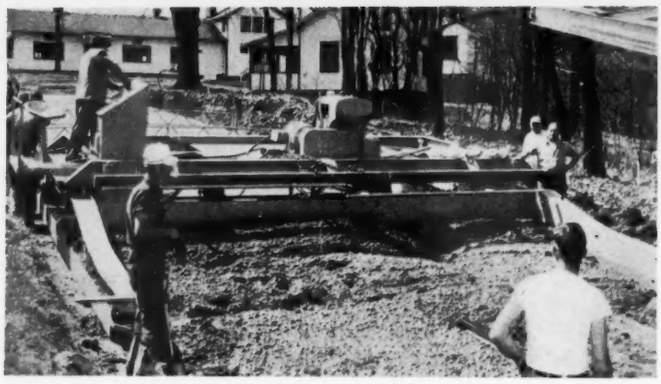
Since 1937, Twin Disc Clutch Company has specialized in Torque Converter Drive for powered industrial equipment. Crawler tractors represent one of the most successful applications.

By applying the crawler tractor's horsepower and torque through the cushioned drive of fluid, Torque Converter Drive permits peak utilization of horsepower and prevents engine lugging—provides smoother, easier, more flexible operation with minimum clutching and shifting—promotes faster work cycles and more production per day.

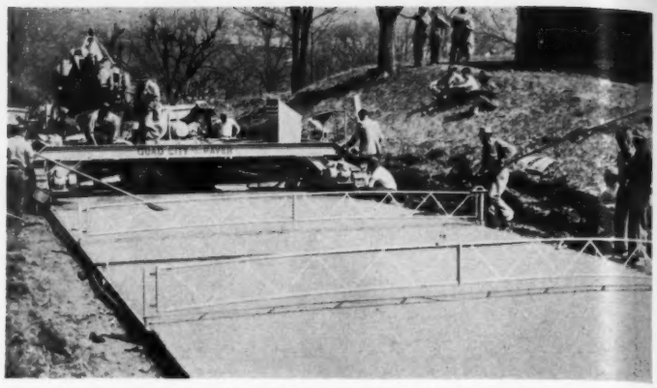
TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES

TWIN DISC
Torque Converters





The Quad City slip-form paving finisher at work. Because of the tamping action of the paver's strike-off, dumped concrete requires no spreading beyond that which the paving mixer can do. Operating without road forms, the paving finisher travels on 22-foot crawler tracks.



Behind it, the slip-form paving finisher leaves a finished slab, shaped by built-in slip forms adjustable for 20 to 25-foot widths. The two sections of trailing forms allow workmen to finish the edges and to check vertical tolerances with a straightedge.

Slip-form paving finisher requires no side forms

A concrete-paving finisher that operates without side forms has been placed on the market by Quad City Equipment Co., 646 25th Ave., Rock Island, Ill. The new self-propelled machine is designed with built-in slip forms adjustable for slabs 20 to 25 feet wide. The machine travels on two 22-foot crawler tracks that walk on each side of the prepared subgrade.

Equipped with a tamping mechanism and vibrating screeds, the finisher produces slabs whose vertical edges retain their shape without additional forming. On early test runs, the machine constructed base-course pavement with a tolerance of $\frac{3}{8}$-inch in 10 feet. The revised production model, the SF-25-B will finish pavement to finished highway specifications.

Working with one dual-drum paver the Quad City slip-form paving finisher is reported to have made a pro-

DRILLING

to Investigate Underground Conditions

the MOBILE* *way!*

There is a versatile, one-man Mobile Drill costing as little as $1,290. Available with hydraulic or hand feed.

. . . a few of the users of MOBILE DRILLS:

- *Arkansas Resources & Development Commission
- *Board of County Road Commissioners (Grand Rapids)
- *Delaware Geological Survey
- *S. J. Groves Constructions
- *Peter Kieweit and Sons
- *Moss-Thornton Company, Inc.
- *Western Contracting Co.
- *Williston Shell Rock Co.
- *80% of State Highway Departments.

There's nothing like a Mobile Drill—for low original cost—for versatility—and for maneuverability. Mounted on a Jeep or a 4-wheel-drive truck, the rugged, lightweight Mobile Drill can be transported over roughest terrain.

It's better to be safe—rather than sorry when making a bid. It costs so little with a Mobile Drill. Be sure—get your sub-soil information the Mobile Drill way! Write for full information—no cost or obligation.

* *World's Largest Manufacturer of Light Vehicle Powered Drills*

MOBILE DRILL

MOBILE DRILLING, INC.
950 NORTH PENNSYLVANIA STREET
INDIANAPOLIS 4, INDIANA

Another Leading Contractor Depends on Sturdy, Efficient Cummer Plants for Faster Production, Less Down Time.

HERE'S PROOF . . .
that Cummer "True Portability" Increases asphalt plant tonnage *for Extra Profits!*

Don Wells, Inc., widely-known contracting firm of Detroit, Michigan, knows from actual experience that the "True Portability" of Cummer Asphalt Plants is an important factor in successful contract bidding.

Cummer Portable Asphalt Plants are true to their name. They are actually portable—easily and economically—and are state-approved. For that reason, Don Wells, Inc., can go after jobs, whenever available, that involve 8 to 10 thousand tons of asphalt. Without a Cummer Portable Plant, this firm might have to pass up such profitable business.

The Don Wells-Cummer Portable pictured here is completely wired, ready to plug in to a diesel generator set. Lifting hooks are installed for speedy handling. Folding legs (for example, on the dryer) fold up to frame, fold down to grade on timber foundation—concrete is not necessary. Note dust-collecting equipment which discharges reclaimed dust into hot elevator.

Like so many other contractors, Wells says that it gets more than guaranteed minimum capacity—thanks to Cummer's exceptionally rugged construction.

A new, fully-illustrated catalog, giving complete specifications on all types of plants with equipment and accessories, is now available. Send for your copy today.

CUMMER

THE F. D. CUMMER & SON CO.
1827 EAST 18th ST. • CLEVELAND 14, OHIO

duction run of 1,550 feet of 9-inch pavement, 24 feet wide, in a 9½-hour day. It is estimated that the machine can handle the output of two dual-drum pavers on such work.

Concrete dumped in front of the slip-form paving finisher requires no spreading beyond that done by the paving mixer. The strike-off is a part of the machine's extruding mechanism, which accurately meters the concrete with a uniform density to the vibratory screeds for final compaction. This mechanism is adjustable for crown variations as well as for slab depths of zero to 10 inches.

The zero adjustment allows the use of this machine for alternate-lane paving when pouring between finished slabs. This makes the unit exceptionally versatile for highway and airport work.

The master vibratory screed is made of two overlapping steel screeds, also adjustable for specified crown and for crown correction on super-elevated curves. In addition, a 24-inch-wide rubber belt travels back and forth transversely behind the vibratory screed. Two belt rollers on either side of the paving finisher adjust this belt screed for slab thickness.

The slip-form sides of the concrete paver can be quickly retracted or extended on the job with the top frame unbolted and brought into the required position. These forms extend the full length of the crawler tracks, and 16-foot sections can be added to trail behind the paver. Extensions are held parallel by cross trusses.

The length of the crawler tracks serves to iron out minor irregularities in grade. With the slip-form rail supported by rollers at 6-inch intervals on each steel track pad, the machine's design provides, in effect, the action of a 22-foot straight edge.

Power for the machine comes from a 10,000-watt engine-generator and totally enclosed motors. The gearhead motors deliver more than 100,000 inch-pounds of torque to the drive sprocket of each of the specially-designed crawler tracks. Neoprene-armored cables and water-tight connectors are used throughout.

For further information write to the company, or use the Request Card at page 18. Circle No. 164.

Heede offices move

The warehouse and offices of the concretor equipment division of B. M. Heede, Inc., have moved from 80 Broad Street, New York, N. Y., to 30-01 37th Ave., Long Island City 1, N. Y. Personnel and management at the new location will be the same as that in New York City.

Built to Last Longer on the Toughest Jobs!

GOODALL
CONVEYOR BELTING

"SUPER TRIPLE-S"

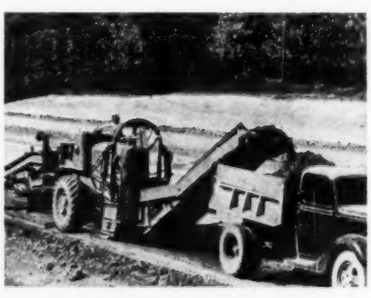
Conveyor Belting at its best . . . for super-severe service. Built to handle crushed stone up to 10" and other highly abrasive bulk materials, wet or dry, particularly on long center hauls where tension is high and extreme flexibility is required. Weather-resistant cover. Tensile strength, friction and other details determined by specific requirements.

"TRIPLE-S"

Designed for severe service but where weight of bulk material and length of carry do not demand "Super-SSS" quality. Recommended for crushed stone up to 6" or 8", abrasive ores, etc.

"LACROSSE"

A perfectly balanced, quality belt for all but the most severe conditions. Used for handling sand, gravel, shells, ashes, etc.



GOODALL MUCKER BELTS

"Wear King" Brand. Developed especially for use on Conway Mucking Shovels in tunnel excavating, and employed on most of the largest modern tunnel jobs.

GOODALL GRADER BELTS

"76" Brand. For many years, the Contractor's best assurance of long, trouble-free service on heavy-duty Elevator Road Graders.

Contact Our Nearest Branch for Catalog, Details, Prices

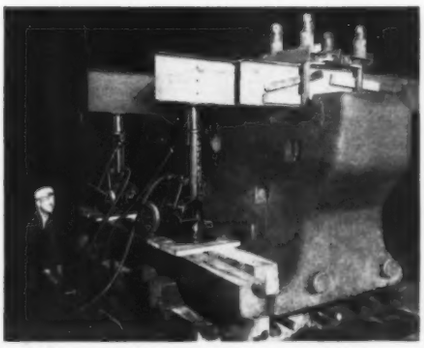
GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.

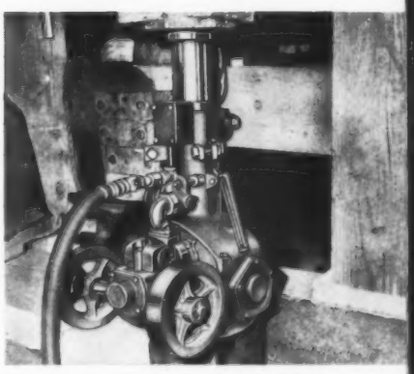
Branches: Philadelphia • New York • Boston • Pittsburgh • Indianapolis • Chicago • Detroit • St. Paul • Los Angeles • San Francisco • Seattle • Spokane • Portland • Salt Lake City • Denver • Houston • Goodall Rubber Company of Canada, Ltd., Toronto • Distributors in Other Principal Cities

Est. 1870

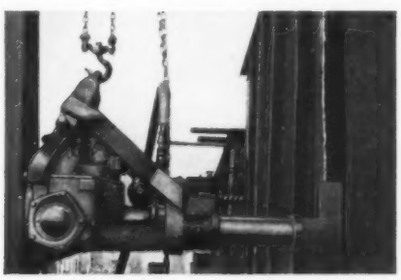
How to put air to work on heavy jobs!



One man can lift hundreds of tons in minutes with the touch of his fingers when he has a pair of Duff-Norton air motor power screw jacks at his command. Two jacks can be operated simultaneously from one Y-valve connection. Jacks can be operated from same air system used for other pneumatic tools (70-200 psi).



Sinking piling under structures and other hard-to-get-at places where standard pile driving equipment cannot operate is another example of the versatility of these powerful jacks. Since air is used only to operate motor, jacks can't lower or creep under the load in event of air failure for any reason.



Straightening trucks, tanks, freight cars, heavy bins, hoppers, raising and positioning bridges, pushing large diameter culvert pipe through solid earth or fill are other everyday uses for the 6 models ranging in size from 20 to 100-ton capacities. *Mail the coupon today for bulletin AD-11-S giving complete specifications.*

DUFF-NORTON *Jacks*

Duff-Norton Company

P. O. Box 1889, Pittsburgh 30, Pa.

Please send complete details on air motor power screw jacks to:

Name *Title*

Company *Phone*

Address

WEATHER CHARTS

The weather outlook for July

The average weather picture—including precipitation, temperatures of 90 degrees or higher, and thunderstorms—for July is indicated on the accompanying four maps, which are published as an aid to contractors in planning their work month.

The numbered black lines indicate the average number of days on which the weather condition represented by the particular chart may be expected to occur. When the number of days is given as a decimal value, such as .5, .25, or .1, the condition may be expected to occur only once every 2, 4, or 10 years, respectively, in the areas through which the lines are drawn.

If a contractor bidding on a job in Fort Wayne, Ind., requires a minimum of 24 working days during July to complete concrete work on schedule, the charts will tell him that the odds are against his finishing the job on time. Chart 1 tells him that in the Fort Wayne area rainfall of .01 inch or more occurs on an average of 10 days during July. This leaves him only 21 working days.

Readers are reminded that this information does not represent specific forecasts. Rather, it is based on averages compiled by Weather Corporation of America from records of weather stations all over the country.

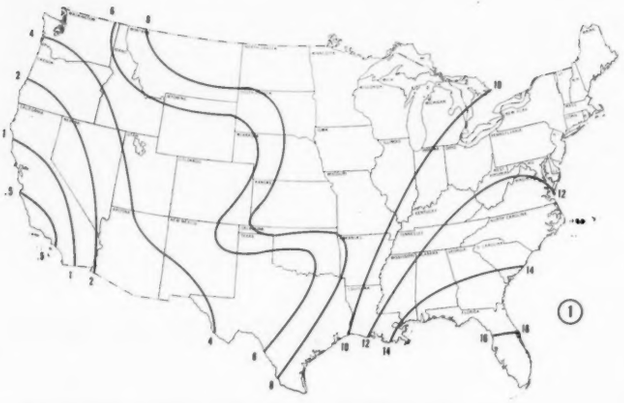


Chart 1. Days with .01 inch or more of precipitation.

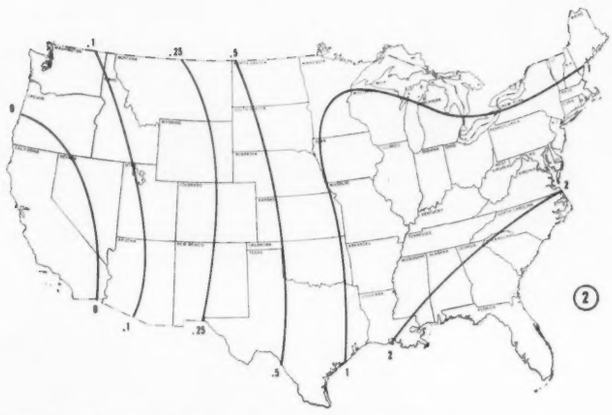


Chart 2. Days with 1 inch or more of precipitation.

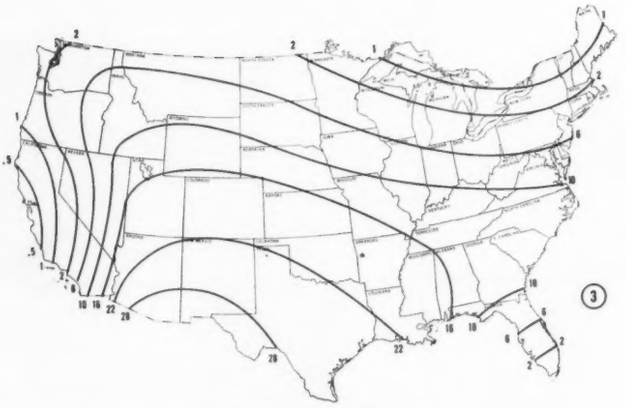


Chart 3. Days with temperatures of 90 degrees or more.

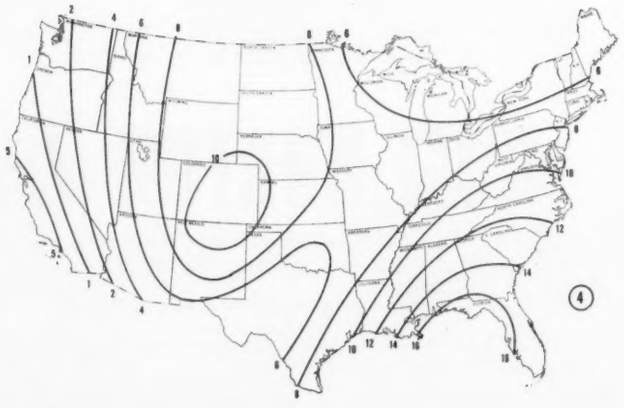
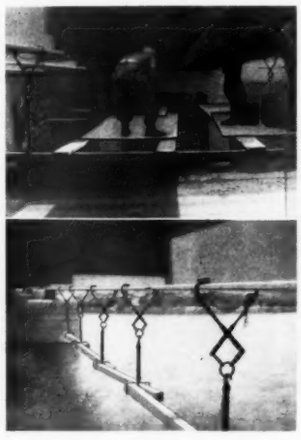


Chart 4. Days with thunderstorms.



Swing-Lo Suspended Scaffold

Most Practical Scaffold for Any Job on Rolled Beam Bridges, By-Passes

Easily assembled clap-on suspension scaffolding that is horizontal with the beam for working overhead. Fully adjustable for 10" to 20" I-beam flanges; moves along the beams. Light in weight; interchangeable parts; adjustable for height. SAFE!

Upper photo shows position for construction of bridge decking; Swing-Lo permits greater accessibility, efficiency.

Lower photo illustrates application of Swing-Lo and needle beams, pushed out from shore, in working position over water.

Swing-Lo Suspended Scaffold Co., Covert, Michigan.
Pat. Pending

THE Drion® METHOD

Write for full information.

Meets All Specifications

DRION CONCRETE CURING COMPOUND
(Clear and White)
DRION AIR-ENTRAINING AGENT
DRION CONCRETE HARDENER
(Dry or Liquid)
DRION FORM LACQUER and THINNER

THE GREGG CO.
INCORPORATED
BROAD STREET
EAST RIVERTON, N. J.
RIVERTON 9-1575

Some attractive territories for qualified distributors available

JUST DRIVE ON!
with **MILLER Tilt-Top!**
cut loading time **up profit time**

You can't beat MILLER Tilt-Top's fast, easy loading. ONE man can drive on or off the tilted platform in less than **two** minutes . . . without the bother of any special skids, cribbing or jacks. This easier, faster loading cuts time between jobs, adds more productive, **profit** time every day. Whatever you haul, dozers, trenchers, rollers or other heavy equipment, there's a MILLER Tilt-Top to handle them easier, faster and safer!

Model "B" 10 ton $1175*
Optional equipment (priced extra): 16' long platform (8'x14' standard) hydraulic tilt control, 2 speed hand winch and electric brakes.
**FOB Milwaukee, Plus 5% Federal Tax*

miller Tilt-Top trailer company
456 S. 92nd St., Milwaukee, Wis.

write for further information
Swenson Spreader & Mfg. Co.
Lindenwood, Illinois

Speed Sealcoating Jobs with SWENSON SPREADERS

A load of forty tons of steel is within the lifting and hauling capacity of this big, new LeTourneau-Westinghouse mobile crane. With a maximum lifting height of 32 feet, the crane will also find use in such applications as steel beam and girder erection.

Mobile crane lifts 40 tons and sets it down gently

■ A 48-ton mobile crane that can lift an 80,000-pound load, carry it, and set it down gently under precise control is the latest development of LeTourneau-Westinghouse Co., Peoria, Ill.

Powered by a 325-hp engine and mounted on 8-foot-tall low-pressure tires, the huge crane will operate over terrain formerly considered inaccessible to such equipment. On pavement it will travel at speeds up to 40 mph A heavy-duty sliding-gear transmission with ten forward and two reverse gears provides a wide variety of speed and power selections.

More than 50 feet long and 13 feet wide, the crane can reach out over 30 feet and lift its load 32 feet high. Despite its size and weight, the machine is reported to be extremely maneuverable, turning completely around in a space only 47 feet wide. Because the crane's great length places the operator's cab 30 to 60 feet from the crane hook, an electric remote control-box has been supplied so that operation of the crane can be directly controlled from the ground.

Electricity is used extensively for the power and controls of the machine. Power is supplied by an electric generator which can also be used for other functions requiring 110 to 120-volt alternating current of 58 to 63 cycles. Electric fingertip switches control steering as well as the action of electric motor and gear-box units that move cables to operate the hook, boom, and carriage of the crane. As a safety precaution, all hoisting and booming operations are controlled by spring-loaded brakes on the electric motors.

The giant crane was developed in cooperation with the U. S. Navy's Bureau of Aeronautics and will be used by the Navy for lifting and carrying its largest combat aircraft. The first unit, designated Model MB-1, made its debut recently at the Floyd Bennett Field Naval Air Station on Long Island, N. Y.

For further information write to the company, or use the Request Card at page 18. Circle No. 134.

You Buy ONE B & L Tool and get the service of TWO

The extra service of a second tool is built into Brunner & Lay Pneumatic Tool Accessories. They are made on the principle that if we can cut out, or cut down, the cost of a second tool we can get your business for the third.

Here's how—(1) special formula tool steel, (2) scientific heat treatment; this, plus—advanced functional designs that make work easier and/or much faster. Tools backed by 73 years' service to the construction field. Check your stock and order today.

Sabur Points, Moil Points, Hi-Duty Points and all other Brunner & Lay Tools fully guaranteed. Request Bulletin T-11-3.

Brunner & Lay Products

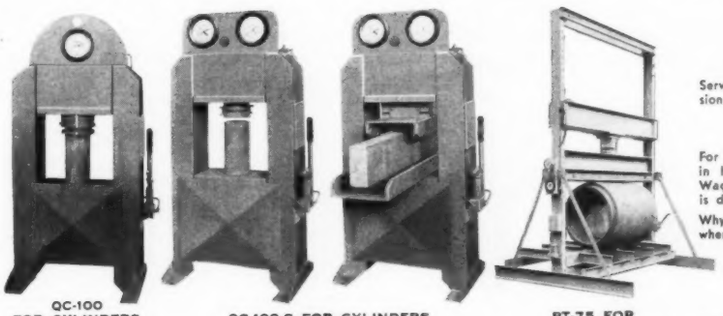
Brunner & Lay, Inc. 9300 King St. Franklin Park, Ill.
Brunner & Lay Rock Bit Corp. 2514 E. Cumberland St. Philadelphia 25, Pa.
Brunner & Lay, Incorporated 2425 East 37th St. Los Angeles 58, Calif.
Brunner & Lay, Inc. 150 Leslie St., Dallas, Texas
Brunner & Lay Rock Bit Corp. Sweeten Creek Rd., Asheville, N.C.
Brunner & Lay Corp. 660 N. Tillamook St., Portland 12, Ore.

WILKINSON LINE LOCATOR FOR EFFICIENCY and ECONOMY

PROTECT YOUR PROFIT BY REDUCING COSTS . . .

1. Spots all pipe and cable locations before uncovering, preventing damage, expensive repairs and lost time.
2. Indicates depth, too.
3. Leading utilities and contractors everywhere use it to reduce job costs and speed excavating operations.

WILKINSON PRODUCTS COMPANY
3987 Chevy Chase Drive — Pasadena 3, California — SYlvan 0-4314



QC-100 FOR CYLINDERS AND CUBES

QC-100-S FOR CYLINDERS CUBES AND BEAMS

PT-75 FOR PIPE UP TO 84" I. D.

FORNEY

Serves the Entire Industry with low cost compression and flexure testers for every purpose.

CYLINDERS . . . CUBES . . . BEAMS
PIPE . . . BLOCKS AND BRICKS

For portable use the QC series can be cut down in height and weight for mounting in Station Wagons and Pickup Trucks. The P-75 Pipe Tester is designed for quick erection on job site.

Why depend solely on outside Laboratory tests when you can test as often as you wish with your own tester right on the job?

WRITE FOR BULLETIN 505

FORNEY'S, INC.
TESTER DIVISION
BOX 310 • NEW CASTLE, PA.

ONE MAN and a MAINCO WHEEL can beat 2 MEN using CHAIN or TAPE!

MAINCO DISTANCE MEASURING WHEEL

Send for descriptive folder

THE MAINTENANCE CO., INC.
Dept. P 453 W. 42nd St., N. Y. 36, N. Y.

For Sale

Second-hand, 75 HP Coatsville boiler complete with oil burner—priced to sell. Contact the

McCarter Iron Works, Inc.,
P. O. Box 13, Norristown, Pa.

CLASSIFIED ADVERTISING

An advertising inch in the Trading Post is measured ⅞-inch vertically on one column. Space reservation close in the New York office on the 10th of the month preceding publication. Send your classified copy to:

The Trading Post, Contractors & Engineers
470 Fourth Avenue, New York 16, N. Y.

DECALS
SAVE UP TO 25% ON YOUR DECALS
★★10 DAY DELIVERY★★
FOR PRICES SEND ROUGH PENCIL SKETCH OF DECAL YOU ARE NOW USING
MIRACLE DECAL CO.
234 South Washington
WICHITA, KANSAS

STOP that WATER
With FORMULA No. 640
A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—hold 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs. Applied quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.
HAYNES PRODUCTS CO., OMAHA 3, NEBR.

Now!
BUY used equipment
SELL used equipment
ACQUIRE competent personnel through
The Trading Post Section of
CONTRACTORS & ENGINEERS

INDEX TO ADVERTISERS *(Names in italics are advertising agencies)*

Acker Drill Co., Inc. 104
Bauer Advertising, Inc.
Adams Division 25
Caldwell, Larkin & Sidener-Van Riper, Inc.
Alexander Mfg. Co. 138
Marks & Neese Adv., Inc.
Allis-Chalmers Tractor Div. 117
Bert S. Gittins, Advertising
Allison Div., GMC 54
Kudner Agency, Inc.
Alter Co. 167
American Hoist & Derrick Co. .. 104
Ruthrauff & Ryan, Inc.
American-Marietta Co. 61
Turner Adv. Agency
American Pulley Co. 98
Arndt, Preston, Chapin, Lamb & Keen, Inc.
American Sisalkraft Corp. 129
Sutherland-Abbott
American Steel & Wire Div. 38, 39
Batten, Barton, Durstine & Osborn
Anthony Co., *Biddle Co.* 51
Armco Drainage & Metal Products 93
N. W. Ayer & Son, Inc.
Arps Corp. 80
Ervin R. Abramson, Advertising
Austin-Western Co. 158, 159
Merrill, McEnroe & Assoc., Inc.

Badger Machine Co. 157
Graves & Associates
Barber-Greene Co., *Buchen Co.* .. 150
Bartlett Mfg. Co. 122
Beebe Brothers 177
Allied Advertising Agency
Berger & Sons, Inc., C. L. 122
Mack LeBlang Co.
Bethlehem Steel Co. 130, 146
Jones & Brakeley, Inc.
Bettis Corp., *Archer & Woodbury* 144
Blaw-Knox Co.,
Const. Equip. Div. 11, 143
Russell T. Gray, Inc.
Bridgeport Implement Works, Inc. 157
Wright Adv. Agency, Inc.
Briscoe Mfrs. of California 53
Clif Furgurson Advertising
Bros Boiler & Mfg. Co., Wm. 74
Alfred Colle Co.
Brunner & Lay, Inc. 175
Norman P. Hewitt
Buck Equipment Corp. 155
S. C. Baer Co.
Bucyrus-Erie Co. 76
Bert S. Gittins, Advertising
Buffalo-Springfield Roller Co. 77
Spencer Curtiss, Inc.
Burch Corp. 133, 162
Morgan Advertising Co.
Butler Bin Co. 37
Morrison-Greene-Seymour, Inc.

Carolina Tire Co. 26
Cartwright Industries, Inc. 142
Silver & Douce Co., Inc.
Caterpillar Tractor Co. .. 10, 114, 179
N. W. Ayer & Son, Inc.
Celotex Corp. 120
MacFarland, Aveyard & Co.
Chevrolet Div., GMC 78, 79
Campbell-Ewald Co.
Chicago Pneumatic Tool Co. .. 66, 67
G. M. Basford Co.
Clark Equipment Co. 41, 180
Marsteller, Rickard, Gebhardt & Reed, Inc.
Cleveland Trencher Co. 163
Meermans, Inc.
Clipper Mfg. Co. 153
Kaufman Advertising Co., Inc.
Colorado Fuel & Iron Corp. 135
Doyle, Kitchen & McCormick, Inc.
Commercial Shearing & Stamping Co. 65
Consolidated Diamond Tool Corp. 68
Construction Machinery Co.'s 81
Weston-Barnett, Inc.
Continental Motors Corp. 98
Hopkins Agency
Continental Rubber Works 124
Eugene C. Laird, Advertising
Cummer & Son Co., F. D. 172
W. N. Gates Co.
Cummins Engine Co., Inc. 90, 91
Needham, Louis & Brorby, Inc.

Dempster Brothers, Inc. 92
Charles S. Kane Co.
Diamond Iron Works Div. 149
L. H. Gross & Assoc.
Dickenson General Tire Service .. 112
D'Arcy Advertising Co.
Diesel Energy Corp. 40
Mohr Associates, Inc.
Doresy Trailers 145
Morris Timbes, Inc.
Downs Crane & Hoist Co. 137
Steller, Millar & Lester, Inc.
Duff-Norton Co. 173
Bond & Starr, Inc.
Dust Suppression & Engineering Co. 177

Economy Forms Corp. 114
J. M. Hickerson, Inc.
Eimco Corp., *Matsie Co.* 35
Ellis & Ford Mfg. Co. 88
Dudgeon, Taylor & Bruske, Inc.
Erie Strayer Co. 128
Mitchell Adv. Agency
Euclid Div., GMC 31
Richard T. Brandt, Inc.

Fabreeka Products Co., Inc. 102
Edmund S. Whitten, Inc.
Farnco Sales Co. 45
Fayette Mfg. Co. 142
Beeson-Reichert, Inc.
Felker Mfg. Co. 158
Clyde D. Graham, Advertising
Firestone Tire & Rubber Co. 69
Sweeney & James Co.
Flexible Road Joint Machine Co. 62, 63
McClure & Wilder, Inc.
Flexible Steel Lacing Co. 170
Kreicker & Meloan, Inc.
Flintkote Co. 148
Marschalk & Pratt Div.
Ford Div., Ford Motor Co. 89
J. Walter Thompson Co.
Forke Brothers 147
Ayres, Swanson & Assoc., Inc.
Forney's, Inc. 175
Irvin Eubanks, Advertising
Foster Co., L. B. 134
Lando Advertising Agency
Franki Foundation Co. 99
Richard La Fond Adv., Inc.
Frederick Iron & Steel, Inc. 84
Emery Adv. Corp.
Fuller Mfg. Co. 178
Spencer Curtiss, Inc.

Gabb Special Products 170
Charles Palm & Co.
Galion Iron Works & Mfg. Co. 152
Morgan Advertising Co.
Gar-Bro Mfg. Co. 17
Dan Ebberts Adv. Service
Garrett Corp. 88
J. Walter Thompson Co.
Garrison Mfg. Co. 176
Clyde D. Graham, Advertising
Gar Wood Industries, Inc. 165
Dobbins, Woodward & Co.
General Machine & Welding Works 143
General Textile Mills, Inc. 168
Corbin Adv. Agency
Goodall Rubber Co. 173
George C. Taylor, Advertising
Grace Mfg. Co., W. E. 112
McMains Adv. Agency
Gredag, Inc. 127
Frank A. Martin, Adv.
Greenville Steel Car Co. 34
Ketchum, MacLeod & Grove, Inc.
Gregg Co., Inc. 174
Griffin Wellpoint Corp. 145
Posner-Zabin
Gulf Oil Corp. 20, 21
Young & Rubicam, Inc.
Gunderson-Taylor Machinery Co. . 124
Ball & Davidson, Inc.

Hamden Machine Products, Inc. .. 160
Langeler Adv. Agency, Inc.
Hartford Fire Insurance Co. 119
Marschalk & Pratt Div.
Hayward Co. 89
Marsteller, Rickard, Gebhardt & Reed, Inc.
Heede, Inc., B. M. 154
Posner-Zabin
Heltzel Steel Form & Iron Co. .. 48, 49
McClure & Wilder, Inc.
Hendrix Mfg. Co., Inc. 94
Svolos Advertising Service
Hetherington & Berner, Inc. 136
Caldwell, Larkin & Sidener-Van Riper, Inc.
Highway Equipment Co., Inc. 154
Connor Assoc., Inc.
Highway Trailer Co. 163
Arthur Towell, Inc.
Hobart Brothers Co. 118
Ralph Dalton & Assoc.
Hobbs Mfg. Co. 24
Thomas L. Yates Adv. Agency
Homelite Corp., *Sutherland-Abbott* 140
Horn Co., Inc., A. C. 141
G. M. Basford Co.
Hough Co., Frank G. 22, 23
Ervin R. Abramson, Advertising
Huber-Warco Co., *Jay H. Maish Co.* 46
Hunt Process Co., Inc. 131
Degner & Associates
Hyatt Bearings Div., GMC 75
D. P. Brother & Co.

Ideal Reel Co. 151
Ingersoll-Rand 113
Marsteller, Rickard, Gebhardt & Reed, Inc.
Insley Mfg. Corp. 55
Bozell & Jacobs, Inc.
International Harvester Co. 82, 83, 108
Leo Burnett Co., Inc.
International Vibration Co. 134
Howson Advertising
Iowa Mfg. Co. 18
Russell T. Gray, Inc.

Jackson Vibrators, Inc. 104
Stevens, Inc.
Jaeger Machine Co. 52
Maurice Mullay, Inc.

Kensington Steel Co. 144
Alfred Colle Co.
Kiesler Co., Joseph F. 152
Koehring Co. 28, 29
Andrews Agency, Inc.
Koffler Sales Corp. 140
Konkure Co. 123
Kotal Co., *Felt Advertising, Inc.* .. 81

Laclede Steel Co. 60
Batz-Hodgson-Neuwoehner
Lenker Mfg. Co. 128
Leschen Wire Rope Div. 71
Arthur R. MacDonald, Inc.

LET **GARRISON**

Hydraulic Boosters

SUPPLY THE STEERING POWER FOR HEAVY-DUTY ROAD EQUIPMENT

With Garrison Boosters hydraulic power takes over the work of steering! Drivers work faster, get more done per hour with less fatigue! Operating costs go down! Equipment lasts longer! Finger tip control through hydraulic power steering makes it easy to maneuver in cramped quarters, reduces steering accidents in off-highway operations.

Put power steering to work for *you*. Your maintenance crew or shop can easily install Garrison Hydraulic Boosters on your road equipment today. Contact your dealer or write for information.

Garrison Hydraulic Steering Valve and Power Cylinder installed on an Allis-Chalmers AD-3 Motor Grader.

1500 SOUTH SANTA FE AVENUE • LOS ANGELES 21, CALIFORNIA

LeTourneau-Westinghouse Co. 107, 109
Andrews Agency, Inc.
Lincoln Electric Co. 27
Griswold-Eshleman Co.
Lippmann Engineering Works 139
Ervin R. Abramson, Adv.
Littleford Brothers, Inc. 95, 164
Perry-Brown, Inc.
Lubriplate Div., Fiske Bros. Refining Co. 80
E. M. Freystadt Assoc., Inc.
Lufkin Rule Co. 44
Jepson-Murray Advertising

Madsen Iron Works, Inc. 149
Frank Barrett Cole, Advertising
Maintenance Co., Inc. 175
Mall Tool Co. 137
Merrill, McEnroe & Assoc., Inc.
Manitowoc Engineering Corp. 103
Ervin R. Abramson, Advertising
Manu-Mine Research & Development Co. 99
Marlow Pumps 136
Richard LaFond Adv., Inc.
Marvel Engineering Co. 163
Guenther-Bradford & Co.
Master Builders Co. 2
Bayless-Kerr Co.
Master Vibrator Co., *Yeck & Yeck*. 101
Mayo Tunnel & Mine Equipment . 51
Godfrey Agency
McCarter Iron Works, Inc. 144
Hopson Advertising Agency
McConnaughay, K. E. 97
Grubb & Petersen
McKiernan-Terry Corp. 155
Michel-Cather, Inc.
McKinney Drilling Co. 115
McKissick Products Corp. 27
Martha Stone & Associates
Mechanics Universal Joint Div. .. 114
Midwest Adv. Agency
Midland Industries, Inc. 87
Altman-Gilbert Adv. Agency
Miller Electric Mfg. Co., Inc. 162
M & M Advertising, Inc.
Miller Trailer Co. 174
Franklin Fisher Adv. Agency
Minneapolis-Moline 133
Graves & Associates
Miracle Decal Co. 175
Lago & Whitehead Co.
Mixermobile Distributors, Inc. ... 115
McMurphey & Webber, Inc.
Mobile Drilling, Inc. 172
Lahr Adv. Agency, Inc.
Monatco Mfg. Corp. 86
Phillips-Reick-Fardon, Advertising
Morse-Starrett Products Co. 86
Hopfer-Castleman Adv. Assoc.
Moulton Irrigation Co., *Harper Co.* 54
Muller Machinery Co., Inc. 119
Thoma & Gill

Natale Machine & Tool Co. 101
Joseph S. Vogel & Co.
Naylor Pipe Co. 118
Fred H. Ebersold, Inc.

Oliver Corp., *Buchen Co.* 131
Onan & Sons, Inc., D. W. 81
Graves & Associates
Overman Mfg. Co., I. J. 85
Reith Studios, Advertising
Owatonna Tool Co. 85
E. T. Holmgren, Inc.
Owen Bucket Co., *T. H. Ball & Son* 111

Penn Tool & Machine Co. 112
Ross Llewellyn, Inc.
P&G Supply Co. 68
Carvel Nelson & Powell
Prehy Co. 163
Presstite Engineering Co. 111
Batz-Hodgson-Neuwoehner
Prime-Mover Co. 47
Clem T. Hanson Co.

Quad-City Equipment Co. 170
Quinn Wire & Iron Works 106
Lessing Adv. Co., Inc.

Radio Corp. of America 45
Al Paul Lefton Co., Inc.
Richmond Screw Anchor Co., Inc. . 80
Geer, DuBois & Co., Inc.
Rockford Clutch Div. 166
Midwest Adv. Agency
Rogers Brothers Corp. 105
T. H. Ball & Son
Rolatape, Inc., *Caron Advertising* .. 156
Ruemelin Mfg. Co. 164
Paulson-Gerlach & Assoc., Inc.

Safway Steel Products, Inc. 110
Cramer-Krasselt Co.
Salem Tool Co. 136
Meek & Thomas, Inc.
Sawyer & Son Co., H. M. 166
Shattuck, Clifford & McMillan, Inc.
Scarborough Contracting Corp. ... 161
Seaboard Equipment Co., Inc. 145
Rea, Fuller & Co., Inc.
Servicised Products Corp. 137
Ross Llewellyn, Inc.
Shawnee Mfg. Co., Inc. 124
Carl Lawson Advertising Co.
Shell Oil Co. 42, 43
J. Walter Thompson Co.
Simplicity System Co. 12
Power & Condon
Sinclair Refining Co. 19
Morey, Humm & Johnstone, Inc.
Slope Meter Co. 141
Soilaire Industries 151
Olmsted & Foley
Soiltest, Inc. 126
Martin-Engel & Assoc.
Southwest Welding & Mfg. Co. ... 106
Dan Ebberts Advertising Service
Sprague & Henwood, Inc. 130
Frederick B. Garrahan, Ind. Adv.
Stoody Co. 121
Clyde D. Graham, Advertising
Storer Decal Co. 153
Stow Mfg. Co. 110
Riger & Sheehy Advertising
Stratex Instrument Co., Inc. 171
Frank Ball & Co.
Stulz-Sickles Co. 87
Sidney Koretz & Co., Inc.
Superior Concrete Accessories, Inc. 96
Admakers
Superior-Lidgerwood-Mundy Corp. . 70
Albert Frank-Guenther Law, Inc.
Superior Scaffold Co. 113
Michael Brand Associates
Swenson Spreader & Mfg. Co. 174
E. R. Hollingsworth & Assoc.
Swing-Lo Suspended Scaffold Co. . 174
Gibler Adv. Service
Symons Clamp & Mfg. Co. 133
Marsteller, Rickard, Gebhardt & Reed, Inc.

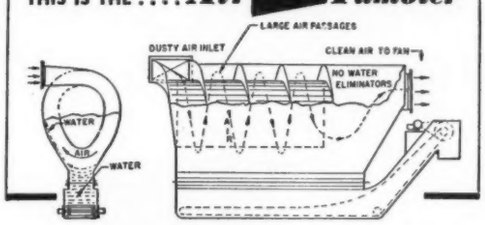
Tampo Mfg. Co. 126
Thomas F. Conroy, Inc.
Templeton, Kenly & Co. 156
Glenn-Jordan-Stoetzel, Inc.
Tennant Co., G. H. 142
Texas Co., Asphalt 5
Texas Co., Lubricants 8, 9
Erwin, Wasey & Co., Inc.
Thew Shovel Co. 50
Thomson Advertising, Inc.
Thurman Machine Co. 44
Jay H. Maish Co.
Timken Roller Bearing Co. 30
Batten, Barton, Durstine & Osborn, Inc.
Tractor Spreader Co. 105
Dobbins, Woodward & Co.
Twin Disc Clutch Co. ... 167, 169, 171
Spencer Curtiss, Inc.

Union Metal Mfg. Co. 123
Griswold-Eshleman Co.
Union Wire Rope Corp. 58, 59
R. J. Potts, Calkins & Holden, Inc.
Unit Crane & Shovel Corp. 161
Paulson-Gerlach & Assoc., Inc.
United States Envelope Co. 87
Wm. B. Remington, Inc.
United States Rubber Co. 56, 57
Fletcher D. Richards, Inc.
United States Rubber Co., Naugatuck Chemical Div. 116
Fletcher D. Richards, Inc.
United States Steel Subsidiary .. 38, 39
Batten, Barton, Durstine & Osborn
Universal Atlas Cement Co. 15
Batten, Barton, Durstine & Osborn
Universal Form Clamp Co. 125
Ross Llewellyn, Inc.

Vacuum Concrete, Inc. 127
Loog, Katz & Barrington
Van Brush Mfg. Co. 105
Viber Co. 160
Walter C. Davison Co. Adv.
Vulcan Iron Works, *Biddle Co.* ... 86

Waco Mfg. Co. 166
Ray C. Jenkins Adv. Agency, Inc.
Wain-Roy Corp. 73
Ervin R. Abramson, Advertising
Warn Mfg. Co. 148
Gail Advertising Co.
Water Seals, Inc. 168
Lester L. Jacobs, Inc.
Watts & Co., Charles R. 169
Burke Co.
Waukesha Motor Corp. 138
Cramer-Krasselt Co.
Western Welding & Mfg. Corp. 168
White Co., David 164
Calkins & Holden, Inc.
Whiteman Mfg. Co. 13
Taggart & Young
Wilkinson Products Co. 175
Willard Concrete Machinery Sales Co., *Dan Ebberts Adv. Service* .. 84
Williams Mfg. Co., Hugh B. 16
Winslow Scale Co. 61
Wisconsin Motor Corp. 26
Paulson-Gerlach & Assoc., Inc.
Worthington Corp. 32, 33
James Thomas Chirurg Co.
Wyoming Valley Equipment Div. . 156
Gutendorf Adv. Agency
Wyzenbeek & Staff, Inc. 135

THIS IS THE .... Air Tumbler



the master of **DUST** *in industry* ★ ★ ★

SIMPLE — DEPENDABLE
NO FIRE HAZARD
HIGH EFFICIENCY
CONSTANT CAPACITY
LOW OPERATING COST

WRITE FOR BULLETIN NO. 531

DUST SUPPRESSION & ENGINEERING COMPANY

P. O. BOX 67 • LAKE ORION, MICHIGAN

FREE! 17-Page CATALOG

Lift, Pull, Lower with BEEBE BROS. all-steel HAND WINCHES

It's brand new! Fully illustrated. Send for it today. This free, 17-page catalog gives you complete specifications and prices on Beebe Bros. 2-, 5-, and 15-ton hand winches in 8 drum sizes. GUARANTEED UNBREAKABLE. Shows how to convert your hand winch to power operation, and back again, quickly and economically. Contractors the world over install machinery and erect equipment weighing up to 500 tons, simply and safely with Beebe hand winches.

BEEBE BROS.
2739 - 6th Ave. So. • Seattle 4, Wash.

MANUFACTURER MEMOS

Robert S. Stevenson head of Allis-Chalmers

Robert S. Stevenson is the newly elected president of Allis-Chalmers Manufacturing Co., Milwaukee, Wis. He succeeds the late William A. Roberts.

Formerly executive vice president of the company, Mr. Stevenson started with Allis-Chalmers in 1933 as a salesman in the tractor division at the Kansas City, Mo. branch. Since that time, he has served the company in a number of capacities—as assistant manager of the Omaha, Nebr., branch, as assistant territory manager, as manager of the Northwest and Southwest territories, as assistant general sales manager for the tractor division, and as general sales manager.

He was appointed vice president in charge of the tractor division in 1951, and later that year was elected to the company's board of directors. In 1952, he became executive vice president of the company.

The following year, Mr. Stevenson visited Allis-Chalmers and other manufacturing facilities in Europe, returning to appear before the Congressional joint committee on atomic energy urging a wider industrial participation in the development of nuclear power. He is a member of the Milwaukee County Expressway Commission, a director of the National Safety Council, and a member of the American Road Builders' Association. A native of Seattle, Wash., Mr. Stevenson was graduated from Washington State College, Pullman, Wash., in 1929.

The late president of the company, Mr. Roberts, was active in many national, business, and trade groups. He was a member of the President's Advisory Committee on the National Highway Program, the National Industrial Conference Board, and the Wisconsin Turnpike Commission. He joined Allis-Chalmers tractor division in 1924, left to go into business as a distributor-dealer, and then rejoined the company in 1930. He became vice president in charge of the division in 1943, executive vice president for the tractor division in 1947, and company director and member of the executive committee in 1948.

The new president of Allis-Chalmers Mfg. Co., R. S. Stevenson.

Lincoln Electric names Stringham to new post

The chief engineer of The Lincoln Electric Co. since 1951, L. K. Stringham, has been made vice president in charge of engineering for the Cleveland, Ohio, firm.

L. K. Stringham, vice president in charge of engineering for the Lincoln Electric Co., Cleveland, Ohio.

Since starting work with the company in 1933, Mr. Stringham has done experimental research, product development, and testing, and has designed welding machines, electrodes, and fluxes for both manual and automatic welding.

Under his direction, the company's welding department pioneered development of iron powder electrodes in this country, and the production of a new universal welding machine that produces both ac and dc current.

George Landis, the former engineering vice president, has been appointed vice president in charge of research for Lincoln Electric.

Two new chief engineers at Lincoln are Norman J. Hoenie and Emmett Smith, who will work in the machine division and the electrode division, respectively. Mr. Hoenie joined the company in 1931 and Mr. Smith started with Lincoln in 1928.

Big loads, faster, speed new dam for Southern California Edison

Here is one of a fleet of Kenworth 801 earth movers, used by Southern California Edison to excavate and fill at their recently-completed dam in the Vermillion Valley of Central California.

Each of the Kenworths is powered by a 200 hp diesel driving through a Fuller 10-F-1220 Transmission—hauling a rated payload capacity of 36,000 lbs. This 10-speed heavy-duty transmission has even, short steps (average 30%) between ratios that help maintain rpm at the most efficient, highest economy range.

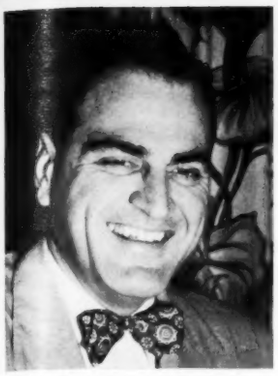
On job after job, where loads are the biggest and the going is the toughest, you'll find Fuller Transmissions putting horsepower to work efficiently. Next time you order heavy-duty construction equipment, specify Fuller Transmissions.

Model 10-F-1220, Fuller heavy-duty Transmission designed for use with engines up to 1220 cu. in. displacement.

Fuller TRANSMISSIONS ®

FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO, MICHIGAN

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla.



Curtis L. Willmott, director of the Wellman Engineering Co., Cleveland, Ohio.

Willmott placed in charge of Wellman sales program

The combined and coordinated sales program at McDowell Co., Inc., Cleveland, Ohio, has been placed under the direction of Curtis L. Willmott, vice president of the organization. Mr. Willmott has also been elected to the board of directors of Wellman Engineering Co., a subsidiary.

He will direct sales activities not only of the parent company, but also of the Wellman Engineering Co., Cleveland, Ohio, and its divisions, Williams Bucket, Akron, Ohio; Anker-Holth Division, Port Huron, Mich.; Locomotive Crane, Cleveland; and Dwight-Lloyd, also of Cleveland.

John J. McGlone, most recently with Blaw-Knox Co., Pittsburgh, Pa., has been made sales manager of Wellman's Williams Bucket division.

C. I. T. Corp. elects assistant vice president

Wallace B. MacGregor, head of Michigan operations for C. I. T. Corp., a subsidiary of C. I. T. Financial Corp., New York, N. Y., has been elected assistant vice president of the firm. With the company for 24 years, Mr. MacGregor has been with the Detroit office since 1944.

John J. Flanagan, operating head of the Detroit office, has been made assistant secretary of the industrial financing organization.

W. L. Stinson is the new Alabama representative for C.I.T. Corp. Previously, Mr. Stinson represented the firm in Georgia.

Clark representative

The appointment of Nicholas A. D'Arcy, Jr., as factory representative for the automotive division of Clark Equipment Co., Buchanan, Mich., has been announced by the firm. Mr. D'Arcy will handle Clark's line of axles, transmissions, torque converters, and complete power trains in San Luis Obispo, Kings, Tulare, and Inyo counties in southern California, Clark County in Nevada, and the entire state of Arizona. George Riley and John Eber will assist Mr. D'Arcy.

Roger W. Robinson has been appointed sales manager for the company's transmission division. He will make his headquarters at Jackson, Mich.

Napco buys division of Westinghouse Air Brake

Napco Industries, Inc., Minneapolis, Minn., has purchased the Transo Loader Division of Westinghouse Air Brake Co., and is currently engaged in moving the plant from Coldwater, Mich., to Minneapolis. Until the new facilities in Minneapolis go into operation next month, sales and service will continue uninterrupted at the Coldwater plant.

Domestic sales of the new division will be under the direction of Roy E. Mullin, head of the sales department of the Napco Products Division. Leonard Hunke, export director of another Napco-controlled firm, Northwestern Auto Parts Co., will head the export program for the division.

Three shifts made by I-H in managerial personnel

Succeeding R. E. Bloye as manager of manufacturing for the Industrial Power Division of International Harvester Co., Chicago, Ill., is Menno Felber, former manager of the company's tractor works. Mr. Bloye has been made manager of manufacturing for International Harvester's French subsidiary company.

Henry A. Torgersen has taken Mr. Felber's place as manager of the tractor works. Previously, he was assistant manager of the I-H tractor-plant in Louisville, Ky.

Wayne E. Green, former motor truck district sales manager in New Orleans, has been transferred to the Chicago office. He replaces M. F. McCarty, who is now serving the Chicago area.

When figuring earthmoving costs...

THE No. 12 GOES ON THE CREDIT SIDE

The Caterpillar No. 12 Motor Grader is a big, versatile machine that always is entered on the credit side of ledger books. Particularly when you figure earthmoving costs.

Knutson-Gould Construction Co. of Kansas City, Mo., knew that when it began hauling fill for the approach to the Missouri Bridge at Jefferson City. Here, you see its CAT* No. 12 Motor Grader as the cost-cutting member of a team of equipment moving 260,000 yards of loess and clay.

The No. 12 is maintaining the haul road. By so doing, it is wringing the last cent of economy out of the big tractor-scraper teams. They can haul their maximum capacity at the highest possible speed. The D7 and D8 pusher Tractors are not called away from the borrow pit to help rescue mired-down equipment.

And down time costs are slashed because the road is an *aid* to the tractor-scrapers, not a torture trail that causes breakdowns.

Your Caterpillar Dealer will be glad to show you the No. 12, No. 112 and the No. 212 Motor Graders at work on your job. Have him demonstrate the reasons successful contractors always put Cat Motor Graders on the credit side when they figure earthmoving costs.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks

99% OF ALL CAT MOTOR GRADERS EVER BUILT ARE STILL IN USE

2¼-yd. MICHIGAN 175A strips hot mix asphalt without scarifying . . .

This big POWERHOUSE handles bigger jobs cheaper!

Check the specs of the MICHIGAN* 175A:

BUCKET CAPACITY..... 2¼ yds.
WEIGHT..... 24,100 lbs.
LIFTING CAPACITY..... 15,000 lbs.
SPEED . . Up to 27 mph, Forward and Reverse
HORSEPOWER..... 133 Diesel, 126 Gas, 165 Supercharged

Don't look for "comparative" data on the MICHIGAN 175A—there is *no machine comparable*. This big bruiser is nearly 50% bigger than the next closest machine on the market. From flywheel to bucket, the 175A is built to do bigger, heavier jobs—jobs that no other rubber-tired machine can handle.

Better traction and flotation With the MICHIGAN's exclusive power train—300% torque multiplication, power shift transmission (no engine clutch) and planetary wheel axles—you get a shockless flow of power right down to the ground. There's no surge, no wind-up in the axle shaft, no wild wheel-spin. The operator has feather-touch control over his wheels; in weak soil conditions or mud, he can ease off or step up the power to keep from digging in. With this kind of smooth power transmission, you get the full advantage of the MICHIGAN's extra weight and power—you dig material *out*, you don't dig the machine *in*.

Hydraulic power does the work In spite of its size and power, the MICHIGAN 175A is easier to operate than most machines one-third its size. Hydraulic power does all the real work: power steering, 4-wheel power brakes, power-shifting with two simple levers on the steering column, no clutch pedal.

See it in action! We'll prove that the MICHIGAN is in a class by itself in the Tractor Shovel field: your local MICHIGAN distributor will arrange a demonstration—on your own job, if you wish. Or write for 12-page Tractor Shovel booklet containing explanation and cutaway drawings of the MICHIGAN power train. Any MICHIGAN is available on a low-cost Lease Plan—ask for brochure which explains how you can use it.

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division
384 Second Street
Benton Harbor 30, Michigan
Phone WA 6-6184

*A Trademark of Clark Equipment Company